MEMOIR

OF A

MAP of HINDOOSTAN;

OR THE

MOGUL's EMPIRE:

With an EXAMINATION of ſome POSITIONS in the former SYSTEM of INDIAN GEOGRAPHY;

And ſome ILLUSTRATIONS of the preſent one:

And a Complete INDEX of NAMES to the MAP.

By JAMES RENNELL, F. R. S.

Late MAJOR of ENGINEERS, and SURVEYOR GENERAL in BENGAL.

From *Samarchand* by *Oxus*, Temir's Throne,
To *Agra* and *Lahor* of Great Mogul,
Down to the *Golden Cherſoneſe* ——
And utmoſt Indian Iſle *Taprobane*.

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PREFACE.

WHILST the theatre of the BRITISH WARS in HINDOOSTAN was limited to a particular province of it, little curioſity was excited towards the general Geography of the country: but now that we are engaged either in wars, alliances, or negociations, with all the principal powers of the Empire, and have diſplayed the BRITISH STANDARDS from one extreme of it to the other; A MAP OF HINDOOSTAN, ſuch as will explain the local circumſtances of our political connections, and the marches of our Armies, cannot but be highly intereſting to every perſon whoſe imagination has been ſtruck by the ſplendor of our victories, or whoſe attention is rouzed by the preſent critical ſtate of our affairs, in that quarter of the globe.

That, which I now offer to the public, is intended to anſwer the above purpoſes; all ſuch minutiæ as tend rather to introduce confuſion, than to illuſtrate the general ſyſtem, being omitted: and the particular Geography of each province left to be hereafter explained in ſeparate maps, on more diſtinct ſcales; in the ſame manner as Bengal, Oude, &c. are already done. I am aware that I ſhall

incur ſome cenſure for uſing ſo ſmall a ſcale, on the preſent occaſion; as many people who peruſe maps, without reflecting on the nature and intent of their conſtruction, are too apt to expect a large extent of country, and all the minute particulars of it, in the ſame map.

If it be admitted that this map contains a ſufficient number of ſituations and particulars to anſwer the purpoſe intended, the ſmallneſs of the ſcale will be rather an advantage than otherwiſe; as the ideas of connection and relative poſition are beſt preſerved, when the matter lies within a moderate compaſs. And the principal objection that lies againſt ſmall maps (viz.) the difficulty of finding out the names, from the ſmallneſs of the character in which they are written, is here obviated, by means of an Index.

The MAP is contained in two large ſheets, which may either be joined together for the purpoſe of bringing the whole into one view, or bound up ſeparately in an Atlas; as may ſuit the fancy or convenience of the purchaſer. The ſcale is one inch to an equatorial degree; and as the whole map is a ſquare of more than 30 ſuch degrees, its ſurface will be found to contain a ſpace larger than all Europe: although the quantity of land bears no proportion to it.

The whole conſtruction is entirely new, as will appear at once by comparing it with any of the former maps; the

the moſt accurate of which makes the breadth of the *hither* India (or that included between the mouths of the Ganges and Indus) near two degrees and a quarter of longitude *narrower* than it appears in my map; at the ſame time that it makes the lower part of the peninſula three quarters of a degree *wider* than mine does. I have been enabled by means of obſervations of longitude taken at Bombay, Cochin, Madras, Calcutta, Agra, &c. together with meaſured lines and ſurveys extended from the above places, to frame a very good ground work for my map: and, I flatter myſelf, that the general outline, and principal members of it, are determined with as much preciſion, as thoſe of moſt European countries. The ſea coaſts in particular, are as correct as can be expected in a map of this ſcale.

In the diviſion of HINDOOSTAN into ſoubahs, &c. I have followed the mode adopted by the Emperor ACBAR, as it appears to me to be the moſt permanent one: for the ideas of the boundaries are not only impreſſed on the minds of the natives by tradition, but are alſo aſcertained in the AYENEH ACBAREE; a regiſter of the higheſt authority. But for the lower parts of the DECCAN, and the peninſula in general, this ſtandard being wanting, I had recourſe to the beſt information I could get, which was not, indeed, of the moſt perfect kind: and therefore I di-

I directed my attention principally to the ſtate of the modern diviſions in thoſe quarters, the impreſſing a clear idea of which, is one principal aim of the work.

It muſt be obſerved, that ſince the empire has been diſmembered, a new diviſion of its provinces has alſo taken place; by which means ſome ſoubahs now form a part of the dominions of three or more Princes; and very few are preſerved entire. Theſe modern diviſions are not only diſtinguiſhed in the map by the names of the preſent poſſeſſors; but the colouring alſo is entirely employed in facilitating the diſtinctions between them. So that the modern diviſions appear, as it were, in the *fore ground*; and the ancient ones in the *back ground*; one illuſtrating and explaining the other.

Conſidering the vaſt extent of India, and how little its interior parts have been viſited by Europeans, till the latter part of the laſt century, it ought rather to ſurprize us that ſo much Geographical matter ſhould be collected during ſo ſhort a period; eſpecially where ſo little has been contributed towards it by the natives themſelves, as in the preſent caſe. Indeed, we muſt not go much farther back than thirty years, for the matter that forms the baſis of this map. And it muſt not be forgotten, that the Eaſt India Company have cauſed a mathematical ſurvey to be made, at their own expence, of a tract equal in

in extent to France and England taken together; beſides tracing the outline of near 2000 miles of ſea coaſt, and a chain of iſlands in extent 500 miles more.

Perhaps I cannot find a better mode of beſpeaking from the public a favorable opinion of the map, than by particularizing the helps that have been afforded me during the conſtruction of it. Mr. Dalrymple ſtands foremoſt on this liſt. With a liberality, not always to be found amongſt men who poſſeſs the means of information, he has furniſhed me from his valuable collection, with every material in it that could contribute towards perfecting my plan. And accordingly, the moſt valuable of all the new matter that reſpects the ſea coaſts (the ſurveys made by the direction of the Bengal Preſidency excepted) is taken from his collection; and alſo a very conſiderable portion of what reſpects the inland parts of the peninſula, and the northern circars. It was by the help of one of his MSS. that I detected an error of about half a degree of longitude in the poſition of Cape Comorin. Theſe materials, which I have thus been permitted to lay before the publick, as it were in the abſtract, will afford the moſt extenſive information, when publiſhed in detail under the direction of ſo able a maſter; and I heartily congratulate the public on the proſpect of it.

The next Gentleman to whom I am principally indebted, is Mr. Boughton Rouſe, who obligingly tranſlated for me from

from the AYENEH ACBAREE, an account of the boundaries and diviſions of the weſtern ſoubahs, together with a variety of other Geographical matter, much of which is ſo blended with other ſubjects, as to require a tedious, and a patient inveſtigation. This aſſiſtance has enabled me not only to enrich the map generally with places, whoſe ſituations have hitherto been undeſcribed, but to new model all the weſtern part. My obligations to this Gentleman are the greater, in that the aſſiſtance afforded me, was at the expence of that ſmall portion of leiſure, which his public buſineſs left him.

I owe my thanks to Mr. Davy for a tranſlation of the names in the Perſian map of the PANJAB country, which he undertook at the requeſt of Sir Robert Barker, to whom the Perſian map belongs, and to whom I conſider myſelf as equally indebted. This valuable MS. furniſhes us with a clear idea of the names and courſes of the *five rivers*, as well as the general Geography of a country that has hitherto been leſs known to us than any of the Indian provinces.

To Colonel Camac I am indebted for the Itinerary of Golam Mohamed, a Sepoy officer, whom he ſent in 1774 to explore the roads and country between Bengal and the Deccan. I flatter myſelf with the hopes of receiving yet more information from him; as the opportunities which have lately offered, have been too favorable to his ſpirit of enterprize and enquiry to be neglected.

I alſo

I alſo acknowledge my obligations to Governor Vereliſt, General Caillaud, General Joſeph Smith, and to Meſſieurs Farmer, Ramſay, Cotsford, Price, and Townſend, for MS. maps, ſketches, and various articles of information.

To the Reverend Mr. Smith's ingenuity and perſeverance I ſtand indebted for a complete route from the banks of the Jumna river, through the centre of Hindooſtan, to Bombay. This route, by croſſing a tract of country hitherto little known, and, of courſe, very imperfectly and erroneouſly deſcribed, contains much uſeful matter. It happened unluckily, that nothing more than a MS. Journal of General Goddard's march came to my hands, till the map was nearly compleated: but as Mr. Smith's obſervations had previouſly fixed the principal points in it, this is a matter not to be ſo much regretted; and eſpecially as I have ſince corrected moſt of the intermediate ſituations by a map of the General's route.

I have borrowed largely from M. D'Apres' New *Neptune Orientale*, for the ſea coaſts and iſlands: and alſo, though in a ſmaller degree, from M. D'Anville's maps of Aſia and India publiſhed in 1751 and 1752. When it is conſidered that this excellent Geographer had ſcarcely any materials to work on for the inland parts of India, but ſome vague Itineraries, and books of travels, one is really aſtoniſhed to find them ſo well deſcribed as they are. It is with regret that I find myſelf obliged to differ in opinion

from him concerning ſome poſitions in ancient Geography: I mean, that of Palibothra, in particular; and ſome few others. I have generally avoided all diſquiſitions of this kind, from a conviction of the general obſcurity of the ſubject; and which even an intimate knowledge of the Indian languages would not enable me to clear up: for the ſimilitude between ancient and modern names is very fallacious, unleſs ſtrongly corroborated by ſituation. But we cannot well refuſe our aſſent to the opinion that Ptolemy meant the *Suttuluz*, or *Setlege* by the *Zaradrus*; the *Rauvee* by the *Rhuadis*, or *Adaris*; and the *Jenaub*, or *Chunaub* by the *Sandab*alis: becauſe not only the names, but the poſitions have an affinity to each other. And yet this is a part of Ptolemy, which M. D'Anville diſcredits the moſt: but the reaſon was, that he was not himſelf acquainted with the true names of the rivers.

M. Buſſy's marches in the Deccan afford *data* for fixing the poſitions of many capital places there; particularly Hydrabad, Aurungabad, Biſnagur, and Sanore. But ſtill there are plans of ſome of his marches wanting, which, could they be procured, would throw much light on the Geography of the peninſula, and the Deccan: ſuch as that from Pondicherry to Cuddapah, Adoni, and Hydrabad; that from Aurungabad to Nagpour; and the campaign towards Poonah. There are alſo exiſting, Itineraries kept by very intelligent people, who have travelled from Pon-

Pondicherry, direct to Delhi; and from Calcutta to Nagpour: but I know not how to set about procuring them. The public records at Goa, I am informed, contain a vast fund of Geographical knowledge; and yet we are more in the dark, concerning the country on that side of the peninsula, than we are with respect to the centre of the Deccan.

Could the whole mass of Geographical matter that respects India (much of which, is probably in the hands of people who are ignorant of its value) be collected, I make no doubt but that very complete maps of the several provinces of it, might be constructed, on scales large enough for any ordinary purpose.

It is intended by these sheets to particularize the several authorities from whence the positions in the map are drawn; together with the manner of comparing them, in cases where they disagreed: as also, the manner of combining them, when more than one circumstance was required to establish a position. By this means, the authority for each particular, may be known to those who have curiosity enough to enquire after it: and the defective parts being thus pointed out, some future Geographer may be stimulated to seek for better materials. It may also tempt those who are already in possession of such materials, when they are apprized of their use, to contribute them to the public stock. Any communications of the kind will be thankfully received; and a proper use made of them.

The Reader may have obſerved, that in the former part of the Preface, I have alluded to AN INDEX TO THE MAP. There will accordingly be found, at the end of the work, two diſtinct Indexes; the one referring to the matter of the Memoir, the other to the names of countries and places in the map. The great waſte of time occaſioned by ſearching after particular ſituations, in maps of any extent, makes me wonder that an Index ſhould not be deemed as neceſſary an appendage to a large map, as to a large book. For an Index will in the firſt inſtance inform the Reader whether the place ſought after be in the map, or not. If in the map, he is directed to it with as much facility, as to a paſſage in a book from an ordinary Index. And if it be not there, although he may, indeed, blame the map for its deficiency, he muſt allow that it does not rob him of his time by encouraging fruitleſs reſearches.

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BRITTANNIA receiving into her Protection, the ſacred Books of the HINDOOS, preſented by the PUNDITS, or LEARNED BRAMINS: in Alluſion to the humane Interpoſition of the Britiſh Legiſlature in Favor of the Natives of Bengal, in the Year 1781. BRITTANNIA is ſupported by a Pedeſtal, on which are engraven the Victories, by Means of which the Britiſh Nation obtained, and has hitherto upheld, its Influence in India: amongſt which, the two recent ones of PORTO NOVO and SHOLINGUR, gained by GENERAL COOTE, are particularly pointed out by a SEPOY to his Comrade.

EXPLANATION of the COLOURING of the MAP.

The Colours are uſed to point out the Boundaries of the States now actually exiſting in Hindooſtan, and theſe are divided into five Claſſes, *(viz.)*

CLASS I. The BRITISH POSSESIONS; or thoſe of the EAST INDIA COMPANY, diſtinguiſhed by - - - - RED.
II. The POWERS in ALLIANCE with the COMPANY, by YELLOW.
III. The POWERS at WAR with the COMPANY, by - GREEN.
IV. States TRIBUTARY to the POONAH MAHRATTAS, by BLUE.
V. NEUTRAL STATES, by - - PURPLE and ORANGE.

As the two principal of theſe (the NIZAM and MOODAJEE BOONSLAH) lie contiguous to each other, one Colour would not effect ſo clear a Diſtinction between their particular Boundaries, as was required.

The following are the Territories comprized in each Claſs.

I. BRITISH POSSESIONS.——RED.

1. Bengal and Bahar, with the Zemindary of Benares.
2. Broach, &c. Purgunnahs, and Salſette.
3. Northern Circars.
4. Jaghire in the Carnatic.

II. BRITISH ALLIES.——YELLOW.

1. Azuph Dowlah. Oude.
2. Mahomed Ally. Carnatic.
3. Futty Sing. Amedabad.
4. Rana of Ghod.

III. POWERS

III. POWERS at WAR with the BRITISH.

1. Poonah Mahrattas - - - *Bright* GREEN.
2. Hyder Ally. Myſore - - *Pale* GREEN.

IV. TRIBUTARIES to the POONAH MAHRATTAS.——BLUE.

1. Rajah of Joinagur.
2. Rajah of Joudpour.
3. ——— Oudipour.
4. ——— Narwah.
5. ——— Bahdoriah.
6. Part of Bundelcund.
7. Mahomed Hyat. Bopaltol.

V. NEUTRAL STATES.——ORANGE and PURPLE.

1. Moodajee Boonſlah, the Berar Mahratta. ORANGE.
2. Nizamſhaw of Gurry Mundlah, his Tributary.
3. Bazalet Jung. Adoni.
4. Nudjuff Cawn. Agra.
5. Jats. Mewat, &c.
6. Seiks. Moultan and Sindy.
7. Part of Bundelcund.

8. Nizam Ally, Soubah of the Deccan. PURPLE.
9. Shaw Allum. Delhi.
10. Zabeda Cawn. Delhi.
11. Pattan Rohillas. Furruckabad.
12. Adjid Sing. Rewan.
13. Abdalli. Candahar, &c.
14. Singboom.
15. Travancore.

INTRODUCTION.

GEOGRAPHICAL DEFINITION

OF

HINDOOSTAN;

With its general Diviſion into PROVINCES or STATES.

BY HINDOOSTAN, Europeans in general have underſtood the tract lying between the rivers Ganges and Indus, on the eaſt and weſt; the Thibetian and Tartarian mountains on the north; and the ſea on the ſouth. But, ſtrictly ſpeaking, the extent of Hindooſtan *proper* is much more circumſcribed than theſe limits convey an idea of. For, although it has indeed the Indus, and the mountains of Thibet and Tartary for its weſtern and northern boundaries; yet, on the ſouth, according to the Indian geographers, it is bounded by the countries of the Deccan; ſo that the whole peninſula * to the ſouth of a line drawn nearly from Balaſore

* I have called this tract the peninſula in conformity to the general practice; for, properly ſpeaking, the term can no more be applied to it, than to Turky in Europe.

to Broach, is not reckoned Hindooſtan. On the other hand, the Ganges was improperly applied as an eaſtern boundary, as it interſects, in its general courſe, ſome of the richeſt provinces of the empire; whilſt the Burrampooter, which is much nearer the mark, as an eaſtern boundary, was utterly unknown. The addition of theſe lands to the geographical definition of Hindooſtan, bear, however, a trifling proportion to thoſe taken from it in the peninſula. In this circumſcribed ſtate, its extent is about equal to France, Germany, Bohemia, Hungary, Switzerland, Italy, and the Low-countries collectively; and the peninſula is about equal to the Britiſh iſlands, Spain, and Turky in Europe.

I ſhall not attempt to trace the various fluctuations of boundary that took place in this empire, according as the ſeat of government was removed from Gazna to Delhi, to Lahore, to Agra, or to Canoge, as ſuited the politics of the times. It is ſufficient for my purpoſe to impreſs on the mind of the reader, that the provinces of Hindooſtan proper have ſeldom continued under one head during a period of twenty ſucceſſive years, from the earlieſt hiſtory, down to the reign of Acbar in the 16th century. Malwa, Agimere, Guzerat, and Bengal, were, in turn, independent; and ſometimes the empire of Delhi was confined within the proper limits of the province itſelf. Nothing leſs could be expected, where ſome parts of the empire were 1000 miles diſtant from the ſeat of Government: and accordingly, the Hiſtory of Hindooſtan is one continued leſſon to Kings, not to graſp at too much dominion; and to mankind, to circumſcribe the undertakings of their rulers.

During the long reign of Acbar in the 16th century, the internal regulation of the empire was much attended to. Enquiries were ſet on foot, by which the revenue, population, produce, religion, arts, and commerce of each individual diſtrict was aſcertained, as well as its extent and relative poſition. All theſe intereſting and uſeful particulars, were, by Abul Fazil, collected into a book called the AYENEH ACBAREE, or MIRROR of ACBAR; and which, to this day,

day, forms an authentic regiſter of theſe matters. Acbar began by dividing HINDOOSTAN PROPER into eleven ſoubahs * or provinces, ſome of which were in extent equal to large European kingdoms. The ſoubahs were again divided into *Circars*, and theſe ſub-divided into *purgunnahs*. If I was to apply Engliſh names to theſe diviſions, I ſhould ſtyle them kingdoms (or vice-royalties) counties, and hundreds †. The names of the eleven ſoubahs were Lahore, Moultan (including Sindy) Agimere, Delhi, Agra, Oude, Allahabad ‡, Bahar, Bengal, Malwa, and Guzerat §. A 12th ſoubah, that is, Cabul, was formed out of the countries contiguous to the weſtern ſources of the Indus, and included Candahar and Gazna; and three new ones were erected out of the conqueſts in the Deccan: viz. Berar, Candeiſh, and Amednagur; in all fifteen.

A ſlight inſpection of the map will afford more information reſpecting the relative poſitions of theſe ſoubahs to each other, and to the adjacent countries, than whole ſheets of writing. It may be neceſſary, however, to make a few remarks on the boundaries of thoſe ſoubahs that bordered on the Deccan, in order to underſtand the extent of the new conqueſts.

Guzerat, then, extended ſouthward to Damaun, where it touched on the diſtrict of Baglana, a diviſion of Amednagur.

Malwa extended to the ſouth of the Nerbudda river; and an angle of it touched on Baglana and Candeiſh on the ſouth-weſt and ſouth, and on Berar on the eaſt. The Nerbudda formed the reſt of the ſouthern boundary of Malwa, and alſo of Allahabad. The government of Bengal extended to Cattack || and along the river

* It is probable that Acbar might have changed the boundaries of ſome of the old ſoubahs, by adding or taking away certain circars, by way of rendering each province more compact, and the provincial capital more centrical to the ſeveral parts of it.

† Few circars are of leſs extent than the largeſt Engliſh counties.

‡ Called alſo Illahabad.

§ Guzerat is by ſome of the Hindoos conſidered as lying without the limits of Hindooſtan. Vide Berar Rajah's letters.

|| Called alſo Cuttack.

Mahanada; but the ſoubah of Oriſſa appears not to have been formed at that time.

Of the newly erected ſoubahs in the Deccan, * Candeiſh the ſmalleſt of them, occupies the ſpace between Malwa on the north, Berar on the eaſt, and Amednagur on the weſt and ſouth.

Berar, according to the preſent definition, has Allahabad and Malwa on the north; Candeiſh and Amednagur on the weſt; Tillingana and Golconda on the ſouth; and Oriſſa on the eaſt. I apprehend that only the weſtern parts of Berar were reduced by Acbar.

Amednagur †, the ſouthmoſt of Acbar's ſoubahs, had Candeiſh and Malwa on the north; the Gatte, or Balagat mountains on the weſt; Bejapour (or Viſiapour) and Tellingana on the ſouth; and Berar on the eaſt. The limits of this ſoubah are not defined in the Ayeneh Acbaree; and as Acbar had wars in the Deccan during almoſt his whole reign, it may be ſuppoſed that its limits were perpetually fluctuating.

Tellingana, which in the Ayeneh Acbaree is called a circar of Berar, was probably poſſeſſed only in part by Acbar. The ancient Tellingana, of which Warangole ‡ was the capital, comprehended moſt of the tract lying between the Kiſtna and Godavery rivers, known now by the name of Golconda.

Thus we have a ſtandard for the geographical diviſion of Hindooſtan proper, in the time of Acbar; but for the Deccan in general, no authority on record has ever come to my knowledge. It appears that Acbar reduced the weſtern ſide of the peninſula as far down as the 18th degree of north latitude §: and under his ſucceſſors, the whole peninſula, a few mountainous and inacceſſible tracts

* Named by Acbar, DANDEISH, in honor of Prince Danial; but at preſent it bears its *old* name.

† The capital of this ſoubah being originally eſtabliſhed at the city of Amednagur, it gave name to the whole province, but the name of the fortreſs of Dowlatabad has in turn ſuperſeded it. In like manner the name of Tellingana has now given way to that of Golconda.

‡ Called Arinkill by Feriſhta.

§ All the latitudes mentioned in this work being north of the equator; and all the longitudes eaſt of the meridian of Greenwich; I ſhall in future mention only the terms latitude and longitude, leaving the ſpecies of each to be underſtood.

only

only excepted, was either entirely ſubjected, or rendered tributary to the throne of Delhi, and formed into one government under the name of the DECCAN; which name, in its moſt extenſive ſignification, includes the whole peninſula ſouth of Hindooſtan proper. However, in its proper and limited ſenſe, I apprehend it means only the countries ſituated between Hindooſtan proper, the Carnatic, and Oriſſa; that is, the provinces of Candeiſh, Amednagur, Viſiapour, Golconda, and the weſtern part of Berar.

The Carnatic anciently comprized all that part of the peninſula that lies ſouth of the Gondegama * and Tongebroda rivers, from the coaſt of Coromandel eaſtward, to the Gaut mountains weſtward, and was divided into *Balla Gaut* and *Payen Gaut*, or the great and little Gauts †; the former being the weſtern part, and containing the diſtricts of Bednore, Myſore, Coïmbetour, &c. now the country of Hyder Ally: and the latter, the eaſtern part, or the Carnatic according to its preſent definition; in which Ongole, Cudapah, Arcot, Tritchinopoly, Madura, Tanjore, Tinevelly, and Marawar are included.

Having given this very general idea of the original diviſion of India, I ſhall next endeavour to convey an idea of the preſent diviſion of it, as far as reſpects the principal ſtates, or the powers that have appeared on the political theatre ſince the eſtabliſhment of the Britiſh influence.

The Britiſh nation poſſeſs, in full ſovereignty, the whole ſoubah of Bengal, and the greateſt part of Bahar; I ſay *the greateſt part*, becauſe I believe that there may be ſome purgunnahs on the ſouth-weſt of little Nagpour, that were formerly claſſed as belonging to Bahar, but are now in the poſſeſſion of the Mahrattas. In Oriſſa, we poſſeſs only the diſtricts of Midnapour, the reſt being entirely in the hands of the Mahrattas and their tri-

* Called alſo Gilligama. † Gaut, or Ghaut, ſignifies either a paſs through mountains, or a landing place on the bank of a river. In the former ſenſe, the term has been applied to the Carnatic, which is divided by ridges of mountains, abounding with paſſes and defiles.

butaries. The Britiſh poſſeſſions contain about 150,000 ſquare Britiſh miles of land, which is about 18,000 more than is contained in Great Britain and Ireland: and about ten millions of inhabitants.

The natural ſituation of Bengal is ſingularly happy with reſpect to ſecurity from the attacks of foreign enemies. On the north and eaſt it has no warlike neighbours; and has, moreover, a formidable barrier of mountains, rivers, or extenſive waſtes, towards thoſe quarters, ſhould ſuch an enemy ſtart up. On the ſouth is a ſea-coaſt, guarded by ſhallows and impenetrable woods, and with only one port (and even that of difficult acceſs) in an extent of three hundred miles. It is on the weſt only that any enemy is to be apprehended, and even there the natural barrier is ſtrong; and with its population and reſources, aided by the uſual proportion of Britiſh troops, Bengal might bid defiance to all that part of Hindooſtan, which might find itſelf inclined to become its enemy. Even in caſe of invaſions, the country beyond the Ganges would be exempt from the ravages of war, and furniſh ſupplies for the general defence. But, with the whole revenue in our poſſeſſion, the ſeat of war will probably be left to our own choice.

The Nabob of Oude (ſucceſſor to Sujah Dowlah) poſſeſſed the whole ſoubah of that name, and the north-weſt part of Allahabad; to which, of late years, have been added the eaſtern parts of Delhi and Agra, till that time poſſeſſed by a tribe of Afghan Rohillas, and by the Jats. The Zemindary of Benares, which includes alſo the circars of Gazypour and Chunar, conſtituted a part of the dominions of Oude until the year 1774, when its tribute or quit rent of twenty-four lacks was transferred to the Engliſh. This Zemindary, which was lately in the hands of Cheet Sing, occupies the principal part of the ſpace between Bahar and Oude, ſo that only a ſmall part of the territory of the latter, touches Bahar on the north-weſt.

The

The dominions of Oude lie on both ſides of the Ganges, occupying (with the exception of Fizula Cawn's diſtrict of Rampour) all the flat country between that river and the northern mountains, as well as the principal part of that fertile tract lying between the Ganges and Jumna, known by the name of Dooab *, to within forty miles of the city of Delhi. In ſhort, the Britiſh nation, with their allies and tributaries, occupy the whole navigable courſe of the Ganges, from its entry on the plains, to the ſea; which, by its winding courſe, is more than 1350 Britiſh miles.

The dimenſions of Oude and its dependencies may be reckoned 360 Britiſh miles in length from eaſt to weſt, and in breadth from 150 to 180. The capital is Fyzabad on the river Gogra, and very near to the ancient city of Audiah or Oude.

On the ſouth-weſt ſide of the Jumna, and contiguous to the governments of Oude, Benares, and the Mahrattas, is Bundela, or Bundelcund, lately ſubject to Rajah Hindooput, but now divided amongſt his deſcendants. It is a hilly tract of more than 100 miles ſquare, and contains the famous diamond mines of Panna, and ſome ſtrong fortreſſes, amongſt which Callinger is the principal.

The territories of Adjid Sing are contiguous to Bundelcund on the weſt; to the *Berar* Mahrattas on the ſouth, and to Benares on the eaſt. It is nearly of the ſame extent as Bundelcund; and, like that, ſubject to the occaſional depredations of the Mahrattas.

The territories of the Rajahs of Ghod and Bahdoriah, alſo adjoin to the new dominions of Oude on the ſouth of the Jumna river, oppoſite Etayah. The former has the Mahrattas on the ſouth, Jeynagur on the weſt, and Nudjuff Cawn's diſtricts on the north. His territory is ſmall; but within it is ſituated the famous fortreſs of Gwalior, taken from the Mahrattas by the Britiſh forces in 1781.

* Dooab or Doabah ſignifies a tract of land formed by the approximation and junction of two rivers: that formed by the Ganges and Jumna rivers is called by way of eminence THE DOOAB.

Contiguous to the weſtern bank of the Ganges, and ſurrounded by the dominions of Oude, is a ſmall diſtrict belonging to the Pattan Rohillas, of which Furruckabad is the capital. It is little more than thirty miles in extent.

Fizula Cawn, a Rohilla Chief, poſſeſſes the ſmall diſtrict of Rampour lying at the foot of the mountains beyond the Ganges. He is in effect tributary to Oude, by furniſhing his quota towards an eſtabliſhment for the common defence.

The country of Zabeda Cawn, ſucceſſor to Nijib Dowla, an Afghan Rohilla, adjoins to the weſtern bank of the Ganges, and to the northern mountains; and extends as far to the weſt as Sirhind, and ſouthward to Delhi; being about 180 miles long from eaſt to weſt, and near half as wide. He has the Seiks on his weſtern frontier; and, till of late years, the Jats on the ſouth.

Shah Allum, the nominal emperor of Hindooſtan, poſſeſſes the city of Delhi, and a ſmall territory round it, which is all that is left remaining to the Houſe of Timur *. Nudjuff Cawn has, in like manner, the city of Agra; but neither of theſe are of any weight in the politics of Hindooſtan.

The Jats, till within theſe few years, poſſeſſed the principal part of the ſoubah of Agra, and for ſome time fixed their capital at the city of that name; but they are now diſpoſſeſſed of the Dooab, as well as moſt of the open country contiguous to the weſtern bank of the Jumna, and have fallen back to the mountainous country beyond Mewat. I apprehend that the people named *Getes*, on whom Timur made war in his march from Batnir to Sammana, were a part of the Jats †.

The Seiks are the weſternmoſt nation of Hindooſtan: their territories begin at Sirhind, and extend weſtward to the Indus, the whole courſe of which from Attock to Sindy, with the low coun-

* The Houſe of Timur, or Tamerlane, reigned over Hindooſtan, with little interruption, more than 350 years.

† St. Croix's Life of Timur.

tries

tries * on both ſides of it, is ſaid to be in their poſſeſſion: ſo that their dominions conſiſt generally of the ſoubahs of Lahore (or Panjab) Moultan, and Sindy. They are ſaid to conſiſt of a number of ſmall ſtates, independent of each other in their internal government, but connected by a federal union †.

Timur Shaw, the ſucceſſor of Abdalla, whoſe capital is Candahar, is in poſſeſſion of Cabul, Seiſtan, and the neighbouring countries of Perſia; which, altogether, form an extenſive kingdom. The Indus is the general boundary of *the Abdalli* to the eaſt. This government was erected by Abdalla, one of Nadir Shaw's Generals, when his unwieldy empire, like that of Alexander, fell to pieces on the demiſe of the conqueror.

Jeynagur, or Joinagur, a mountainous diſtrict of no great extent, is ſituated on the weſt of Agra, and between the diſtricts of Ghod and Mewat. It is governed by a Rajah, whoſe capital is Joinagur. His vicinity to the Mahrattas has ſubjected his country to frequent ravages, but he has never been totally ſubdued by them.

Joudpour, or Marwar, adjoins to Jeynagur on the ſouth-weſt, and is, in circumſtances, nearly ſimilar to Jeynagur; with this difference, that the diſtrict is more extenſive, being near 200 miles from northeaſt to ſouthweſt. The river Puddar has its courſe through this country, which is a part of the ſoubah of Agimere, and for which Marwar is only another name: Meerta is the preſent capital.

Oudipour, or Cheitore, the country of the Rana, lies on the ſouthweſt of Joudpour, and borders on Guzerat and Malwa.

* The celebrated Mr. Jones very ingeniouſly remarks, "that it is uſual with the Aſiatics "to give the ſame names to the countries which lie on both ſides of any conſiderable river." Thus the province of Sindy is divided by the Indus; Bengal by the Ganges; and Pegu by the Irabatty. Probably, the facility of acceſs to either ſide, by means of a navigable river and an occaſional inundation, ſubjected each of the diviſions, formed by the courſe of the river, to the conſtant depredations of its oppoſite neighbour; till neceſſity produced a compromiſe, which ended in joining them in one community.

† Dowe. Vereſt.

The Rajah, like thoſe of Joudpour and Jeynagur, is ſubject either to become tributary to, or ſuffer the attacks of the Mahrattas, his neighbours. Cheitore was the ancient capital; a place much celebrated for its ſtrength, riches, and antiquity, when it was taken and deſpoiled by Acbar in 1567: Oudipour is the preſent capital.

Of the countries of Nagore, Pucanere-Jaſſelmere, Amercot, and thoſe bordering on the lower part of the courſe of the river Puddar, we know little of at preſent, except that they form a number of petty rajahſhips.

The Mahratta ſtates occupy all the ſouthern parts of Hindooſtan proper, and a great part of the Deccan. Malwa, Berar, Oriſſa, Candeiſh, and Viſiapour; the principal part of Amednagur, (or Dowlatabad) half of Guzerat, and a ſmall part of Agimere, Agra, and Allahabad, are comprized within their extenſive empire; which extends from ſea to ſea, acroſs the wideſt part of the peninſula; and from the confines of Agra northward, to the Kiſtna ſouthward; forming a tract of about 1000 Britiſh miles long, by 700 wide.

This extenſive country is divided amongſt a number of Chiefs or Princes, whoſe obedience to the Paiſhwa, or Head, is, like that of the German Princes to the Emperor, merely nominal at any time; and, in ſome caſes, an oppoſition of intereſts begets wars, not only between the members of the empire themſelves, but alſo between the members and the Head. In fact, they are ſeldom confederated but on occaſions that would unite the moſt diſcordant ſtates; that is, *for their mutual defence:* for few occaſions of foreign conqueſts or plunder, are of magnitude enough to induce them to unite their armies.

Was I inclined, I want ability, to particularize the poſſeſſions and ſituations of all the Chiefs that compoſe the Mahratta ſtate. I ſhall therefore attempt only to mention the principal ones, or ſuch as have appeared on the theatre of the preſent war.

The Paiſhwa, who is the nominal Head of the whole, reſides at Poonah, which is ſituated at the ſouthweſt extreme of the empire, and within a hundred miles of Bombay. He poſſeſſes the principal

part

part of Viſiapour, Baglana, Dowlatabad (or Amednagur) the ſouthern part of Candeiſh, and a ſmall part of Guzerat. His portion of the Deccan is naturally very ſtrong, particularly on the weſt ſide towards the ſea, where a ſtupendous wall of mountains, called the Gauts, riſes abruptly from the low country, called the Concan *; ſupporting, in the nature of a terrace, a vaſt extent of fertile and populous plains, which are ſo much elevated as to render the air cool and pleaſant.

The Paiſhwah's country, together with that of his immediate dependents and vaſſals, extends generally along the coaſt from the diſtricts of Goa, to Cambay. Southward, he borders on Hyder Ally; and eaſtward on the Nizam and the Rajah of Berar. On the north, he has Sindia and Holkar.

Sindia and Holkar divide by much the largeſt part of the rich and extenſive ſoubah of Malwa. The former alſo poſſeſſes the northern part of Candeiſh, including the city of Burhanpour; and the northeaſt parts of Guzerat. On the north, his poſſeſſions in Malwa extend to Narwah, and to within 120 miles of the frontier of Oude †. His capital is Ougein (or Ugein) near the ancient city of Mundu, the capital of the Chilligee Kings of Malwa; and from whom both he and Holkar are ſaid to be deſcended. Holkar's capital is Indoor, about thirty miles on the weſt of Ougein. Gungadar Punt poſſeſſes the diſtrict of Calpy, which borders on the Jumna (and, of courſe, on the new dominions of the Nabob of Oude) eaſtward; and on Sindia weſtward. And Ballagee, brother to Gungadur, has the diſtrict of Sagur, which lies between Sindia's eaſtern boundary and Bundelcund. Neither of theſe diſtricts are equal, in extent, to the principality of Wales.

The Berar Rajah, Moodagee Boonſlah, poſſeſſes generally the ſoubahs of Berar and Oriſſa. On the weſt, his territories border

* Or Cockun.

† During the preſent war, Colonel Camac penetrated from that ſide to the city of Sirong, more than 100 miles within Sindia's frontier.

on the Paiſhwah's; on the ſouth, on the Nizam's; and on the north, on Mahomed Hyat's (a Pattan Rajah) Nizam Shaw's, and Ajid Sing's. On the eaſt, his territories in Oriſſa thruſt themſelves between the Britiſh poſſeſſions in Bengal, and thoſe in the northern * circars; ſo as to occupy near 180 miles of the country adjacent to the ſea, and, of courſe, to break the continuity of our poſſeſſions on the ſea coaſt. Moodajee's dominions are very extenſive, being from eaſt to weſt 600 Britiſh miles, and 250 from north to ſouth. He does not poſſeſs all this in full ſovereignty; for Cattack, Ruttunpour, and Sumbulpour are little more than tributary, and are governed by his brother Bembajee. We know leſs of the interior parts of Berar, than of moſt other countries in Hindooſtan; but, by what we do know, it does not appear to be either populous or rich. Nagpour is the preſent capital †, and the reſidence of Moodajee; and it is ſituated about midway between Bengal and Bombay.

Cattack, the capital of Oriſſa, is a poſt of conſequence on the river Mahanada, as it lies in the only road between Bengal and the northern circars; and the poſſeſſion of this city and its dependencies, gives the Berar Rajah more conſequence in the eyes of the Bengal government, than even his extenſive domain and centrical poſition in Hindooſtan.

Rajah Nizam Shaw, of Gurry Mundlah or Baundhoo, is tributary to Berar.

Futty Sing Guicawar (or Gwicker) who has been our ally during the Mahratta war, has, by us, been put in poſſeſſion of Amedabad and Cambay, together with the diſtricts in general bordering on and

* Theſe circars, or provinces, were originally denominated from their poſition in reſpect to Madras, on which they depend: and the term *northern circars* has at length been adopted by the Engliſh in general.

† Shawpour was the ancient capital, according to Feriſhta. The Ayeneh Acbaree ſays that Berar was formerly named *Werwatit*; and it is remarkable that Pliny mentions the ſame country under the name of *Varetate*; and ſays that it is ſtrong in cavalry and infantry, but keeps no elephants for war.

lying

lying north of the river Mihie; which river ſerves as a common boundary between his diſtrict of Amedabad, and ours of Broach.

Theſe are the principal of the countries reduced into the form of governments by the Mahrattta Chiefs: but ſo habituated are they to rapine and plunder, that few of the neighbouring ſtates, but have, at one period or other, felt and acknowledged their power. Bengal and Bahar were, for a conſiderable time, ſubjected to a regular tribute; and the Carnatic, Myſore, the Nizam's provinces, the Dooab, Bundelcund, and the ſouthern parts of Delhi, have been frequently overrun. However, the power of the Mahrattas appears to have been on the decline, for the laſt twenty years. Shut out of Bengal, the upper provinces *, and the Carnatic by the Britiſh arms, and out of Myſore by Hyder's, their field of action has been much circumſcribed; and the preſent war with the Britiſh power has diſcovered their weakneſs to all Hindooſtan.

Of the five northern circars, Cicacole, Rajamundry, Ellore, and Condapilly †, are in the poſſeſſion of the Engliſh; and Guntoor is in the hands of the Nizam. The four firſt occupy the ſea coaſt from the Chilka lake on the confines of Cattack, to the northern bank of the Kiſtna river; forming, comparatively, a long, narrow ſlip of country, 350 miles long, and from 30 to 70 wide. The nature of the country is ſuch as to be eaſily defenſible againſt an Indian enemy, it having a barrier of mountains and extenſive foreſts on one ſide, and the ſea on the other, the extremities only being open. Its greateſt defect is in point of relative ſituation to Bengal and Madras, it being 350 Britiſh miles from the firſt, and 250 from the latter; ſo that the troops deſtined to protect it, cannot be reckoned on, for any preſſing ſervice that may ariſe at either preſidency. The circars, in point of ſtrictneſs, appertain partly to Golconda (or the Deccan) and partly to Oriſſa; and are held of the Nizam on condition of paying him a regular tribute.

* Thoſe of the Nabob of Oude. † Condapilly circar is written in the revenue books, Muſtapha-Nuggur; and Guntoor Mortizanagur.

The

The poſſeſſions of the Nizam, or ſoubah of the Deccan (the deſcendant of the famous Nizam al Muluck) comprize the province of Golconda, and the eaſtern part of Dowlatabad; that is, the ancient province of Tellingana, or Tilling, ſituated between the lower parts of the courſes of the Kiſtna and Godavery rivers. The Nizam has the Paiſhwah, or the Poonah Mahratta on the weſt; the Berar Mahratta on the north; the northern circars on the eaſt; and the Carnatic, Bazalet Jung, and Hyder Ally on the ſouth. I am not perfectly clear in my idea of his weſtern boundary, which, during his wars with the Mahrattas, was ſubject to continual fluctuation: but I underſtand generally that the river Beemah and the Viſiapour mountains form his preſent boundary, from the Kiſtna, weſtwards to within 130 miles of Poonah; from which point it falls back to the banks of the Godavery river, below Aurungabad: and that the Godavery itſelf forms nearly his northern boundary. His capital is Hyderabad, or Bagnagur, ſituated on the Mòuſſi river, near the famous fortreſs of Golconda.

The diſtricts of Adoni and Rachore are in the hands of Bazalet Jung (brother to the Nizam) but are held of the Nizam. The Sourapour, or Sollapour Rajah, on the weſt of the Beemah river, together with ſome other Rajahs, are his tributaries.

Probably the Nizam's own proper domains, excluſive of his tributaries and feudatories, are not in extent more than 280 miles in length, by 160 wide. Till he took poſſeſſion of the Guntoor circar in 1780, his dominions no where touched on the ſea coaſt.

The Guntoor * circar occupies the ſpace between Condapilly, the ſouthmoſt of our four circars, and the northern part of the Carnatic; extending along the ſea coaſt of the bay of Bengal near fifty miles. The poſſeſſion of this diſtrict to the Engliſh, would have been extremely eligible, as well for the purpoſe of ſhutting out the French nation from the Deccan, as to keep open

* Called alſo Mortizanagur and Condavir.

a communication with the northern circars, and to preſerve the continuity of our poſſeſſions, and thoſe of our allies.

The dominions of the Nabob of Arcot, or the Carnatic, commence on the ſouth of the Guntoor circar, and extend along the whole coaſt of Coromandel to Cape Comorin. It muſt be underſtood that I mean here to include Tanjore, Marrawar, Tritchinopoly, Madura, and Tinevelly; all being appendages of the Carnatic. Under this deſcription, the Carnatic is not leſs than 570 Britiſh miles in length from north to ſouth, but no where more than 110 wide, and commonly no more than 80. Such a long narrow tract of country, bordered by an active and powerful enemy, muſt always be ſubject either to have its diſtant provinces cut off from its aſſiſtance, or, by dividing its force for their ſeparate defence, endanger the ſafety of the whole.

The Britiſh poſſeſſions in the Carnatic are confined to the tract called the Jaghire, which does not extend much more than forty miles round Madras.

The dominions of Hyder Ally, who formerly ſhared the Carnatic with the Nabob of Arcot, and now conteſts the remainder, begin on the weſt of the ridge of mountains beyond Dalmacherry, Sautgud, and Attore; and extend ſouthward to Travancore and Madura; northward to Soonda and Viſiapour, (inveloping Adoni, the territory of Bazalet Jung) northeaſtward to Guntoor and Ongole; and weſtward to the ſea. They comprehend, generally, the provinces of Myſore, Bednore, Coïmbettore, Canaree, and Dindigul; beſides his late conqueſts to the northward, which are Chitteldroog, Harponelly, Sanore-Bancapour, Roydroog, Gutti, Condanore, Canoul, and Cuddapah.

Hyder's preſent territory exceeds very conſiderably, both in extent and revenue, that of his rival the Nabob of Arcot; but probably it will, for a long time, require a Prince of Hyder's talents, to prevent a ſtate, compoſed of ſuch diſcordant parts, from falling to pieces. It appears not improbable, that, on Hyder's death, the

diviſion

diviſion of the peninſula will undergo a conſiderable change; in which caſe, the Mahrattas may become nearer neighbours to us, than they are at preſent.

The dimenſions of Hyder's territories are at leaſt 400 Britiſh miles in length from north to ſouth, and in breadth from 290 to 130; he having by much the largeſt ſhare of the peninſula.

If an Engliſhman caſts his eye over the map, and compares the extent of the dominions of the Mahrattas and of Hyder Ally collectively, with thoſe of Great Britain and her allies, his pride will hardly ſuffer, on the reſult of the compariſon. Without entering into the abſtract queſtion concerning the propriety or neceſſity of the war, or the probable conſequences of it, we muſt at leaſt allow, that the exertions, which have been made towards the ſupport of it, have been aſtoniſhing. One army ſent from the banks of the Ganges acroſs the continent, to counteract the deſigns of the French in the Deccan, and another to reſtore our drooping affairs in the Carnatic, are wonderful efforts; and will live in hiſtory, when the effects of them may ceaſe to be felt.

MEMOIR

MEMOIR *of a* MAP *of* HINDOOSTAN, *&c.*

SO great an extent of country is contained in this map, and the quality of the materials is ſo various in different parts, that it became neceſſary, in order to prevent confuſion, to divide the account of its conſtruction into ſeparate ſections, agreeable to the natural diviſion of the country; and, in ſome meaſure, to the nature of the materials. It is accordingly divided into ſix ſections:

The firſt contains the ſea coaſts and iſlands.

The ſecond, the ſurveyed tract on the ſide of Bengal; or that occupied by the Ganges and its principal branches, as far weſt as the city of Agra.

The third, the tract occupied by the Indus and its branches.

The fourth contains the tract between the Kiſtna river and the countries traverſed by the Ganges and Indus; that is to ſay, the middle parts of India.

The fifth contains the peninſula ſouth of the Kiſtna: and

The ſixth, the countries ſituated between Hindooſtan and China; namely, Thibet, Bootan, Aſſam, Pegu, Aracan, Ava, and part of Siam.

But, before I proceed to the particulars of the conſtruction of the map, it will be neceſſary to explain the itinerary meaſure adopted in places where no ſurveys have been taken. The uſual meaſure of this kind in Hindooſtan is the *coſs*, or *crores*, commonly eſtimated at two Britiſh ſtatute miles. I have not been able to get the true length of the coſs, as fixed by Acbar and other Emperors; and, even if I had, it would be of no uſe in the preſent enquiry, as all my Hindooſtanny itineraries and tables are in computed coſſes.

I ſhall bring into one view ſuch accounts of eſtimated diſtances in coſſes, as I have the means of comparing with known diſtances, in order to determine the proportion between the coſs and a part of a great circle on the globe.

TAVERNIER'S Account of COSSES.

	Eſtd. Coſſes		True hor. diſtance in Geog. miles		Horizontal diſt. of a coſs in Geog. miles	
From Surat to Noopour	44	——	57	——	1,3	
Burhanpour to Sirong	101	——	190	——	1,9	
Sirong to Agra -	106	——	190	——	1,8	
Agra to Allahabad	138	——	220	——	1,6	medium
Allahabad to Benares	46	——	61½	——	1,3	
Benares to Patna -	70	——	119	——	1,7	1,5
Surat to Amedabad	82	——	125	——	1,5	
Delhi to Agra -	68	——	90	——	1,3	
Aurungabad to Maſulipatam	290	——	367	——	1,3	

By MS. Itineraries in my Poſſeſſion.

Allahabad to Fyzabad	62	——	81	——	1,3	medium
Delhi to Lucknow	132	——	210½	——	1,6	
Allahabad to Benares	37	——	61½	——	1,65	1,475
Allahabad to Agra	149	——	220	——	1,5	
Agra to Delhi -	76	——	90	——	1,2	

Taking the medium of the whole, a coſs in horizontal diſtance will be nearly a Geographical mile and a half. But if we reject the diſtance between Burhampour, Sirong, and Agra, which ſeems to be out of the ordinary rule (as Tavernier himſelf remarks that the coſſes there, are much longer than any where elſe) the medium will be 1,43, or juſt 42 coſſes to a degree of a great circle. This is the reſult of the compariſon of the eſtimated coſs with menſuration: but it muſt be obſerved that moſt of the examples quoted here, are from the northern parts of the empire; and that it appeared on the conſtruction of the Deccan, that no more than 1,4 could

could be allowed to the coſs in that part; that is, 43 to a degree. But, as we have few meaſured lines in the Deccan, I have adhered to the above proportion of 42 coſſes to a degree, and have conſtructed the ſcale in the map accordingly. And this horizontal coſs, with the allowance of one in ſeven for the windings of the road, brings the coſs on ordinary roads to one ſtatute mile and nine tenths, or 190 miles to 100 coſſes.

M. D'Anville concludes his enquiry * into the length of the coſs, by determining the number in a degree, on a medium, to be 37; but it muſt be obſerved, that he had no meaſured lines with which he could compare his eſtimated diſtances. On the other hand, in the reſpective diſtances of Candahar, Cabul, and Attock, as deſcribed by him, each degree contains 47 of Tavernier's coſſes.

* Eclairciſſemens, p. 14.

SECTION I.

The SEA COASTS *and* ISLANDS.

CALCUTTA is the point I ſhall ſet out from, as well from its being determined by ſeveral obſervations of longitude and latitude, as from its having a meaſured line of conſiderable extent ſtretching from it both to the eaſt and weſt. I ſhall firſt purſue the route weſtward to the mouth of the Indus, and then return to Balaſore, and go eaſtward to the entrance of the ſtrait of Malacca.

Calcutta, the capital of the Britiſh poſſeſſions in India, as being the reſidence of the General Council, has its citadel placed in latitude 22° 33′ north; and in longitude, by a medium of the obſervations of four different gentlemen, 88° 28′ eaſt from Greenwich *.

Balaſore, ſituated about 101 Geographical miles † S. W. from Calcutta, is the moſt weſtern point determined by the land ſurvey; but, Capt. Ritchie's marine ſurvey having been extended to Point Palmiras, and as I conſider it as being little inferior, in point of exactneſs, to the land one, I ſhall take Point Palmiras, as if determined by menſuration, from the neareſt place of obſervation, Calcutta. Its latitude is 20° 44′, and longitude 87° 2′. In the ſpace between Point Palmiras and Madras, which contains 6 degrees 33 minutes of longitude ‡, no obſervation has

* Hon. Thomas Howe - - - 88° 33′ } Medium
Rev. Mr. Smith - - - - - 88. 28 }
Mr. Magee - - - - - - - 88. 24 } 88° 27′ 45″
Capt. Ritchie - - - - - 88. 26 }

To which may be added the French obſervation at Ghyretty, which is 1′ eaſt from Calcutta - - - - - - - - 88. 29

† I have made uſe of Geographic miles, or thoſe of 60 to a degree, in the account of the conſtruction of the map; and of Britiſh ſtatute miles in giving the comparative extent of countries. They are diſtinguiſhed by G. miles, and B. miles.

‡ Longitude of Madras by the Hon. Thomas Howe's obſ. - - - - - 80° 29′
Of Point Palmiras, inferred from Calcutta - - - - - - - - - - 87. 2

Difference 6. 33

been

been taken by which the intermediate longitudes may be corrected. However, the direction of the coasts are generally favorable for ascertaining the principal points to some degree of exactness, by means of the bearing of the compass and difference of latitude. Accordingly, Capt. Ritchie, in 1770 and 1771, by direction of the Bengal Government, took a series of bearings and distances, which he corrected by the latitudes, along the whole coast between Point Palmiras and Madras; an interval of near 600 G. miles. The result gave 6° 34′ difference of longitude; that is, within 1 minute of the observations; and we may therefore infer that the situations of Masulipatam, Visagapatam, Ganjam, and, in general, all the places along the coast, differ but little from the truth.

But, as accounts of actual mensuration of some particular parts of this coast have since come to hand, I shall state them in detail, as well for the use of future Geographers, as to compare, and, in some cases, to corroborate the whole series.

A line from Masulipatam to Coringo was measured by Major Stevens, and the difference of longitude in consequence found to be - - - - - - - - - - - - 1° 4′

Mr. Ritchie's account made it - - 1. 9

Here it must be noted, that in this particular place the coast runs in a direction of 6 points from the meridian; and, consequently, the distance could not be corrected by the observations of latitude.

Between Visagapatam and Jagarnaut Pagoda, an interval of about 180 G. miles, the bearings by compass, and distance by a Perambulator, were taken by Major Polier in 1759 *, and the result gave the difference of longitude - - - - - 2° 16′ 30″

By Capt. Ritchie - - - - - - - 2. 18. 00

Not that Major Polier's bearings and distances agree entirely with particular surveys made by others, in places which he passed

* On his return to Bengal with Col. Ford from the Masulipatam expedition.

through;

through; for inſtance, Lieut. Cridland places Nizambadda and Nowpara from each other - N. 49° E. — 24,4 G. miles
Polier - - - - - - - - 43. 45 — 25,5
And another map, - - 47. — — 24,8

And again,
From Ganjam to Jagarnaut Pagoda,
By Mr. Polier - - - N 58° E. — 46,75
Capt. Ritchie - - - - 61. 30 — 46,75
Capt. Campbell - - - 55. 10 — 46

However, it is very certain that Major Polier's meaſured line by land, and Capt. Ritchie's bearings and diſtances by ſea, differed on the whole only a mile and half in longitude, and half a degree in the angle of bearing. No doubt, if an actual ſurvey was taken, we ſhould find ſome of the intermediate diſtances too long, and others too ſhort, both in Polier's and Ritchie's; but, one error balancing the other, they both come out nearly alike upon the whole.

As the detail of the coaſt between Jagarnaut and Viſagapatam is taken from the plans of different perſons, I here ſubjoin an account of it:

From Jagarnaut to Ganjam, is from Captain William Campbell: and from Ganjam to Poondy, from Mr. Cotsford.

From Poondy there is a break in the materials for the coaſt, till we come to Nowparah; which is ſupplied by Major Polier's route from that place to Parſumbah, in Mr. Cotsford's.

From Nowparah to Cicacole, is from Lieut. Cridland; and the remainder to Viſagapatam from Capt. Ritchie.

From Viſagapatam to Yanam, the figure of the coaſt is alſo from Capt. Ritchie: from thence to Maſulipatam chiefly from Major Stevens: and from thence to Madras, Capt. Ritchie's entirely.

It is proper to remark, that the whole difference of longitude between Calcutta and Madras, in M. D'Anville's and D'Apres' maps, comes within a few miles of the truth, as they were in poſſeſſion of the obſervations taken at Ghyretty and Pondicherry: but their maps are exceeding faulty in the detail.

The longitude of Madras, or Fort St. George, was aſcertained, by the Hon. Mr. Howe's obſervation in 1755, to be 80° 29′, and its latitude taken on ſhore is 13° 5′. Pondicherry, by the *Connoiſſance de Temps* is placed in 79° 57′ *; and the difference of longitude between them, according to the charts, being 33 minutes, brings the obſervations to agree within a minute of a degree. From Pondicherry to Devicotta, the difference of longitude by the charts, is 6 minutes weſt; and, as the whole diſtance is only about 44 G. miles, and the bearing nearly meridional, no great error can be ſuppoſed. This brings the longitude of Devicotta to 79° 51′.

From Devicotta to Tritchinopoly, a meaſured line was drawn by way of Tanjore by Mr. John Barker, and the difference of longitude found, being 1° 4′ weſt, places Tritchinopoly in 78° 47′ longitude. Its latitude is 10° 49′. From thence to Madura was meaſured by Montreſor, and the difference of longitude given was 20′ 30″; by which Madura muſt be in lon. 78° 26′ 30″. Laſtly, by the ſurveys taken in the countries of Madura and Tinevelly by order of Col. Call, the difference of longitude between Madura and Cape Comorin is 36′ 30″, which brings the cape in 77° 50′. Now, as there is nearly a degree of weſterly variation of the needle between Madras and Cape Comorin, it will have the effect of leſſening the difference of longitude between them, by at leaſt 3 minutes of a degree; and by that means make the longitude of the cape 77° 53′. And this I take to be the true longitude of it. Its latitude is about 7° 57′.

* M. Gentil's obſervation in 1769 gave 79° 53′, or 4 minutes more weſterly than the Con. de Temps.

Until Mr. Dalrymple furniſhed me with materials for fixing the longitude of Cape Comorin, by means of the meaſured lines above-mentioned between Devicotta and Madura, the difference of longitude between Madras and the Cape, was variouſly, and in all caſes, erroneouſly deſcribed. For inſtance,

M. D'Anville made it - - -	3° 15′
Mr. Orme - - - -	3. 7
And M. D'Apres - - -	3. 3
But the truth appears to be - -	2. 36

ſo that the neareſt of the above calculations, is 27′ from the truth.

The particulars of the coaſt between Madras and Cape Comorin are from various hands. The ſurvey of the Company's lands (or Jaghire) extends beyond Sadras. From thence to Point Calymere is from M. D'Apres; and from thence to Tondi, chiefly from my own obſervations in 1763 and 1764. Tondi itſelf is laid down by a ſurvey from Tritchinopoly and Madura. From Tondi to Goodwater iſland is from actual ſurveys of Major Stevens's: thence to Tutacorin from Mr. Delafield's curſory ſurvey: and the remainder to Cape Comorin, is from Col. Call's map of Tinevelly, inſerted in Mr. Orme's Hiſtory.

Between Cape Comorin and Cochin, in lat. 9° 58′, M. D'Anville's, and other maps, allow 1° 25′ difference of longitude, weſt; which, taken from 77° 53′, leaves 76° 28′ for the longitude of Cochin. The Rev. Mr. Smith's obſervation in 1776, places Cochin in 76° 26′ 30″, which is only 1′ 30″ more weſterly than what is given by the bearing.

After the coincidence of theſe facts, it can hardly be doubted that the longitude of Cape Comorin, taken at 77° 53′, is right; for whether we take it by the interſection of the two bearing lines, drawn from the places of obſervation, Pondicherry and Cochin; or ſimply by either of the bearing lines, corrected by the latitude; the

the reſult will be the ſame to two minutes of a degree, or leſs; an approximation ſeldom to be attained, in caſes of this kind.

In the map, Cochin (or at leaſt the ſtrand of it) is placed in 76° 27′. Between it and Bombay, an extent of near 600 G. miles, we have neither ſurveys, nor obſervations of longitude to correct any of the intermediate points: for the obſervation at Goa can hardly be deemed an exception, when it is known to differ 32′ from the longitude deduced from the obſervations at Bombay: and this deduction is founded on the bearings of a coaſt of about 120 G. miles in extent, nearly ſtraight, and in a direction only 25 degrees from the meridian. Moreover, the bearing is corroborated by many authorities, amongſt which are thoſe of Meſſrs. D'Anville and D'Apres.

Taking Cochin at 76° 27′, and Bombay at 72° 40′ *, the difference of longitude by obſervation will be 3° 47′ weſt. Now, M. D'Anville, without any attempt towards correcting the longitude (as he was not furniſhed with any obſervation on that ſide of India, ſave the one at Goa) makes it 3° 50′ 30″, or only 3′ 30″ different from the obſervation. M. D'Apres' makes it 4° 12′, or 25′ greater than by the obſervations. It muſt be obſerved that there is nearly a degree and a half of weſterly variation † on this coaſt; which, if allowed, brings M. D'Apres' difference of longitude to the ſame as that by obſervation. Whether or not, he allowed it, I cannot determine.

* The hon. T. Howe took two obſervations of Eclipſes of Jupiter's firſt ſatellite in 1762, at Bombay, by which longitude was found to be - - - 72 36
And - - - 72 40
The Rev. Mr. Smith in 1776 made it - - - 72 45
Medium 72 40
But by a miſtake of the engraver, Bombay is placed in 72° 38′ 40″, or 1′ 20″ farther to the weſt than was intended. The latitude is - - - 18° 57′

† Variation at Goa in 1763 - - - 1° 50′
at Tellicherry - - - 1 0
at Cochin - - - - 1 34
at C. Comorin - - - 0 41
1777 at Anjenga - - - 1 12

M. D'Anville comes nearer than could be expected in ſo great an extent of ſpace: and I think, upon the whole, we may conclude that there is very little diſcordance between the obſervations, ſurveys, and charts of the coaſts, between Madras and Bombay.

The obſervation of longitude at Goa, recorded in the *connoiſſance de Temps*, (73° 45′) has been made uſe of by all the late Geographers, in fixing the longitudes on the weſt of India; it being the only one that had been made on the weſt of Pondicherry, till the year 1762. By whom it was taken, or in what manner, I am totally ignorant. And to allow it any degree of credit, we muſt reject, not only the obſervations at Bombay and Cochin; but alſo the meaſured lines between Divicottah and Cape Comorin.

I have followed M. D'Apres' general outline of the coaſt of Malabar; but have corrected it in many particulars by the aid of MSS. furniſhed by my friend Mr. Dalrymple, and others.

It is very much to be lamented that there are no obſervations of longitude, to correct the bearing of a coaſt of ſo large an extent as that between Cochin and Bombay; or that a meaſured line was not drawn acroſs ſome part of the peninſula; as for inſtance, between Madras and Mangalore. I underſtand, the diſtance between Madras and Ooſcotta, which is more than half way over, is already meaſured: ſo that there remains only about 150 G. miles between Ooſcotta and Mangalore. This, however, can hardly be expected, whilſt Hyder Ally continues maſter of Myſore and its dependencies. But the longitude on the Malabar coaſt, it is hoped, will ſoon be aſcertained by means of the time keepers on board the Eaſt India Company's ſhips, as they are now coming much into uſe; and as the nature of the navigation on that coaſt, affords frequent opportunities of taking regular ſeries of obſervations.

For my own part, I have little doubt of the truth of the intermediate ſituations between Cochin and Bombay, yet poſitive proofs are always to be deſired, and ſought after, although we may be in poſſeſſion of the ſtrongeſt preſumptive ones, or the beſt grounded deductions.

By the obſervations of longitude at Madras, Pondicherry, Cochin, and Bombay, it appears that the peninſula has hitherto been repreſented about 46 miles of longitude wider than it really is *, and of this exceſs 39′ are already accounted for between Madras and Cape Comorin; M. D'Anville's chart making 3° 15′, and mine only 2° 36′ difference of longitude. See page 24.

Bombay is the weſtermoſt point in the map, that is fixed by an obſervation of longitude. A ſurvey of the Gulf of Cambay, and coaſt of Guzerat, from St. John's Point to Diu Point, has been taken by Lieut. Skynner, by order of the Preſidency of Bombay; and the ſame has been done of Salſette Iſland, including Baſſeen; but unfortunately the interval between Baſſeen and St. John's Point (about 42 G. miles) has been omitted. I have therefore been under the neceſſity of taking the bearing from M. D'Apres, who makes it about N. by W. The difference of latitude is known to be about 38 minutes; and the bearing being ſo nearly meridional, there cannot be much error, if any, in the difference of longitude. The longitude of this Point, thus deduced from Bombay, is 72° 23′: and that of Surat, by the ſurvey from the Point, 72° 45′.

Diu Point is placed according to the longitude given by Lieut. Skynner's Survey from St. John's Point, which places it in 69° 47′

From Diu Point to Cape Mons, beyond the mouth of the Sinde, the bearing is taken from the medium of three charts, furniſhed by Mr. Dalrymple; and appears to be N°. 41° 20′ W †; and the diſtance, corrected by the latitudes of Diu Point and Cape Mons, the former of which is 20° 44′, and the latter ‡ 25° 7′ 30″, gives

	B. D'Anville.		Rennell.
* Bombay - - -	71° 47′	—	72° 40′
Madras - - -	80. 22	—	80. 29
	8. 35	—	7. 49
Difference			— 46

† By Capt. Maſcall's Chart - N°. 39° 45′ W.
Capt. W. Smith's - - 41. 20 } Medium
Capt. Simmons's - - - 42. 20 } N°. 41° 20′ W.

‡ Capt. Simmons's obſervation 25° 6′ 00″ }
Capt. Clements's - 25. 7 30 } Medium
Capt. Cotton's - - 25. 9 00 } 25° 7′ 30″

3° 58′

3° 58′ difference of longitude, weſt; and conſequently that of Cape Mons 65° 49′. M. D'Anville places this Cape 1° 1′ more eaſtwardly, or in 66° 50′, and Bombay in 71° 47′; making the difference of longitude between them 4° 57′, inſtead of 6° 51′, as given in my map: and this difference of near two degrees in ſeven, makes a great alteration in the figure of the coaſt between Surat and the mouth of the Sinde, or Indus: the peninſula of Guzerat being much larger than was formerly ſuppoſed, the gulph of Sinde (or Cutch) much ſmaller; and the Delta of the Indus projecting into the ſea, inſtead of receding from it.

All the particulars of the weſtern coaſt of Guzerat, and the mouth of the Sinde, are copied from the abovementioned MS. charts of Mr. Dalrymple's: and conſequently the whole coaſt from St. John's Point to Cape Mons, is deſcribed from new materials.

I now return to Balaſore.

From Balaſore, eaſtward to Chittigong, the diſtance has been determined by the inland ſurvey; and the figure of the coaſts and inlets by Captain Ritchie's Sea Survey. The difference of longitude between the towns of Balaſore and Chittigong (or Iſlamabad) is 4° 53′ eaſt; and, it is worthy of remark, that the diſtance by Capt. Ritchie's marine ſurvey, agreed with the meaſurement on ſhore, to within two miles and a half.

The charts as late as the year 1752, repreſented the difference of longitude between theſe two places, to be only 3° 48′; that is, 1° 5′ leſs than the truth. And this diminution of the longitude, whilſt the difference of latitude continued right, gave the ſea coaſt between the mouths of the Ganges, a direction of two points, or 22½ degrees more northwardly than the truth; which doubtleſs occaſioned the loſs of many ſhips, who truſted to the information.

From Iſlamabad, in longitude 91° 55′ latitude 22° 20′, the coaſts of Aracan and Pegu take a S. S. E. courſe to Cape Negrais, the extreme point of Pegu to the ſouth weſt; the latitude of which is

under

under 16 degrees, and diſtance from Iſlamabad about 420 G. miles. The outline of this whole coaſt has been traced by Captain Ritchie, under the ſame direction, and in the ſame manner, as the coaſts on the weſt ſide of the Bay. He made the difference of longitude 2° 32′ eaſt from Iſlamabad; placing Cape Negrais in 94 27′ *. Mr. Dalrymple, who has taken uncommon pains to aſcertain the bearing of this coaſt, from journals, and a variety of ſketches and remarks, makes the difference of longitude 2° 34′, or only 2′ different from Mr. Ritchie. The reſult of this laborious enquiry, corrected by a nicely diſcriminating judgment, corroborates, in the ſtrongeſt manner, Capt. Ritchie's calculation; and affords a degree of ſatisfaction next to that of an actual obſervation.

I mean to have it underſtood that Capt. Ritchie's chart of this coaſt, is to be taken only as a general outline, being imperfect as a coaſting chart. The river of Aracan is taken from Mr. Dalrymple's printed collection: as are ſome of the particular bendings of the coaſt, and the north ſide of Cheduba, from his MSS.

Capt. Ritchie's latitude of Cape Negrais, is more ſouthwardly than it is commonly taken at, by 10 minutes; which I cannot account for, as his obſervations of latitude are generally exact.

At this point, my materials for aſcertaining the intermediate longitudes of places on the eaſtern ſide of the Bay, fail me: and I have been under the neceſſity, in a great meaſure, of ſubſtituting judgment for fact, between Cape Negrais and the next place of obſervation, Mergui: which place, as it is given by M. D'Apres in his new *Neptune Orientale*, is in 98° 20′ eaſt longitude, or 3° 53′ eaſt from Cape Negrais. M. D'Anville allows 4 degrees; which comes within 7 minutes of mine; but although we agree nearly in the aggregate, we differ widely in point of particulars.

* The longitude of this Cape was reckoned by M. D'Anville only 93° 16′: ſo that the New Map increaſes the diſtance between the mouth of the Sinde (or Indus) and Cape Negrais, 2 degrees and 12 minutes of longitude.

The MS. charts that I have conſulted, make the difference of longitude in queſtion, 4° 30′ on a medium; which is 37′ more than I make it. And M. D'Apres makes it 4° 19′.

The diſagreement in particulars between M. D'Anville's account and mine, ariſes in the part between Cape Negrais, and the coaſt of Martaban. It happens that this coaſt lies in a direction ſo far from meridional, and at the ſame time the tides and currents of the ſeveral mouths of the Ava river, do ſo diſturb and falſify the ſhip's reckonings, that the true diſtance can never be aſcertained that way, in the ordinary courſe of navigation. Plans of the Perſaim and Syrian Rivers, as high up as the cities of thoſe names reſpectively, have been already publiſhed in Mr. Dalrymple's collection: and, fortunately, I have been able to obtain tracings of the continuations of thoſe rivers (which are the two extreme branches of the Ava river) to the place where they ſeparate from the main river, at about 150 G. miles from the ſea. The bearings of the two branches interſect each other at an angle of about 60 degrees; and therefore, by the help of the latitude, may be uſed, in correcting the length of the coaſt between Negrais and Syrian. The Perſaim, or Negrais branch, was traced by that accurate obſerver, Capt. George Baker, in his way to Ava in 1755. I have not been able to learn by whom the Syrian branch was traced; but by the orthography of the words in the map, the author appears to have been a Dutchman.

The reſult of theſe bearings, corrected by the latitude, as ſet forth in the Syrian map, gives difference of longitude from Negrais Point, to the mouth of the Syrian river, 2° 18′ eaſt; which is about 13′ leſs than M. D'Apres makes it, and 24′ leſs than M. D'Anville. Some of the MS. charts make the difference ſtill more.

The mouths of the Ava river, which form an aſſemblage of low iſlands, like thoſe of the Ganges, are deſcribed from ſeveral MS. charts of Mr. Dalrymple's, collated with M. D'Apres' new chart.

From

From the mouth of the Syrian river to the coaſt of Martaban, in latitude 15° I have copied from the new chart of M. D'Apres, publiſhed a very ſhort time before his death. The figure of the coaſt is quite new.

Between the aforeſaid latitude and Tavai Point, our charts are very imperfect; but generally agree in giving the coaſt a direction of ſouth, a very little eaſtwardly.

From Tavai Point to Mergui, the coaſt is taken from a MS. chart compiled by the late Mr. Howe.

Mergui is placed, as I have ſaid before, according to M. D'Apres' obſervation: that is, in longitude 98° 20′; latitude 12° 9′.

All the remainder of the coaſt, to Junkſeilon; and the whole Mergui Archipelago, is from M. D'Apres.

I NEXT proceed to the chain of iſlands that extend from Cape Negrais to Sumatra; and are known by the names of the Preparis, Cocos, Andaman, and Nicobar iſlands.

Capt. Ritchie, after leaving Negrais, proceeded agreeably to his inſtructions, to deſcribe the ſituation and extent of the iſlands that compoſe this chain.

None of them are more than 84 G. miles diſtant from each other; ſo that he needed never to be more than 41 miles from land: nor, in all probability, as he ſailed with a fair wind, more than 8 hours out of ſight of it; and that but once during the voyage; that is to ſay, between the little Andaman and the Nicobar iſlands. In other places, the diſtance between the lands is commonly much leſs: ſo that the meridional direction of the courſe, and other circumſtances, render this line of much uſe in correcting the longitudes, not only of the iſlands themſelves, but of Sumatra alſo; and,

and, had it been continued as was intended, to Acheen, would have anſwered the purpoſe completely.

Paſſing the Preparis and Cocos iſlands, Capt. Ritchie proceeded to Narcondam, to fix its poſition: then back again to Cocos; down the eaſt ſide of the great Andaman, (which he found to be almoſt a degree of latitude longer than was before ſuppoſed) then up the weſt ſide of it, almoſt to the latitude of 12°: when finding the attempt to circumnavigate the iſland, might prove fatal to the remainder of his work, he proceeded ſouthward; deſcribing the extent, figure and poſitions of the little Andaman and the Nicobars, till he came to the ſouth point of the great (or ſouthmoſt) Nicobar. Here the wind ſuddenly changed to the ſouth, and prevented him from determining the reſpective poſitions of the ſouthern Nicobar and Acheen: which is the more mortifying, as one day's fair wind would have enabled him to accompliſh it.

The reſult of this line of bearing is, that the ſouth end of the Great Nicobar, is in longitude 94° 21′; that is, only 6 minutes eaſt from Cape Negrais.

The poſition of Acheen Head, or King's Point (the N. W. point of Sumatra) has hitherto been deduced from its bearing and diſtance from Malacca, the neareſt place of obſervation; and its longitude according to this deduction, is 95° 30′ according to M. D'Apres. Now the bearing of Acheen from Malacca, being in a direction of more than 60 degrees from the meridian, and the diſtance 450 G. miles; little reliance could be placed on the reſult of it, if it did not happen that the reſpective poſitions of the ſouthern Nicobar, and of Pouloo Ronde (an iſland near Acheen) the one deduced from Negrais Point, and the other from Malacca, agreed nearly with their reputed bearing and diſtance from each other. For, of two MS. charts which I have examined, the one makes 1° 1′, the other 1° 2′ difference of longitude between them; and theſe being laid down apparently without any attempt to ſupport a ſyſtem,

a ſyſtem, may be ſuppoſed to be agreeable to experiment. The bearings and diſtances in theſe MS. charts are

In one S. 56° E. — 72 G. miles
And in the other S. 56. E. — 75

And according to the deduced longitudes abovementioned, the bearing and diſtance is S. 58. E. — 79
making the difference of longitude 1° 5′, or only 3 minutes different from the MS. charts. So that there cannot be any great error in the longitude of Acheen, as laid down in M. D'Apres', and in my map: a difference of a few miles, in the diſtance of 8 degrees, being much leſs than could be expected in ſuch a ſeries of deductions. M. D'Apres makes the bearing and diſtance between the ſouth Nicobar and Pouloo Ronde S 57° 30′ E. 97 G. miles; or difference of longitude 1° 22′, that is, 22′ more than the MS. charts. It muſt be obſerved, that he reckons the ſouth end of the Nicobar 9 miles farther to the north than the truth; occaſioned by his making the iſland ſo much too little in extent: for the north end is in its true latitude. Had the ſouth point of the iſland been in its true latitude, the bearing of Pouloo Ronde would have been more eaſtwardly, and the diſtance only 93, inſtead of 97: and if, on the contrary, he has enlarged his diſtance on the original bearing, to make it anſwer to the latitude, the original diſtance could have been only 85 miles.

I have ſaid before that Capt. Ritchie went no higher up the weſt ſide of the great Andaman, than about the latitude of 12°. The remainder of that coaſt, as well as the paſſage through the iſlands at the north end of it, is from a MS. chart lent me by Mr. Dalrymple; and which carries with it the greateſt appearance of truth, on a compariſon of the ſouth and ſouth weſt parts of the Great Andaman in this chart, with the ſame parts in the chart of Capt. Ritchie.

Barren Iſland, and the Rock on the eaſt of Duncan's Paſſage, are from the remarks of Capt. Juſtice in 1771.

Island *of* Ceylon.

IT happens that the ordinary tracks of Britiſh ſhips, to and from Ceylon, and the coaſt of Coromandel, are not calculated for determining the relative poſitions of Point Pedro and Point Calymere, the approximating points of Ceylon and the continent of India. Hence it is, that we are ſo ill informed, not only of their true ſituations with reſpect to each other, but alſo with reſpect to the parallel of latitude under which they are ſituated.

By my obſervations, Point Calymere (the ſouthern extreme of Coromandel) lies in 10° 20′ latitude. M. D'Apres places it 6 minutes more northwardly; and D'Anville 7 further ſouth. The latitude of Point Pedro, is alſo variouſly repreſented by the above Geographers: I have taken it at 9° 53′.

In M. D'Apres I find the bearing and diſtance from Point Calymere to Point Pedro, to be - S. 37° E. 41 G. miles

In D'Anville - - -	39.	—	38
In a MS. chart, no name -	46.30	—	40

I had an opportunity in 1764, of determining the poſition of Cow Iſland from Tondi, very nearly. This I have placed in the map; and then I have traced off from M. D'Apres' chart, the coaſt between Cow Iſland and Point Pedro; by which means the latter bears from Point Calymere S. 44° E. diſtance 39 G. miles. I think there can be no great objection to this mode of fixing it. The means for determining the figure of Ceylon, may not, poſſibly, be deemed quite ſo ſatisfactory.

Point

Point de Galle was found by Mr. Dalrymple's Time-Keeper *, to be about 2° 37′ of longitude to the eaſtward of Cape Comorin; and M. D'Apres reckons it 2° 41′. I have adopted Mr. Dalrymple's account, and placed Point de Galle in 80° 30′. Now the placing the two almoſt extreme points of the Iſland (Point de Galle and Point Pedro) according to their reſpective differences of longitude from the parts of the continent neareſt to each, and thoſe longitudes differing conſiderably from former charts, makes a difference of 18 minutes of longitude between the relative poſitions of Point de Galle and Point Pedro, in M. D'Apres' chart, and in mine. That is to ſay, Point de Galle is 8 minutes to the eaſt of Point Pedro by my account; and ten to the weſt of it by M. D'Apres'. M. D'-Anville places them nearly under the ſame meridian.

The poſitions of Ramiſeram and Mantole Points, in reſpect to each other, differ widely in Major Stevens's chart, from former accounts: for by lengthening Adam's bridge, Mantole point is thrown much farther eaſtward than uſual.

All theſe circumſtances taken together, occaſion a difference in the form of the iſland of Ceylon, from what it appears in the late maps: the longeſt diameter of it in my map, being more inclined to the weſtward of the meridian, and the northern part much narrower; occaſioned by my having followed Major Stevens's chart of Adam's bridge. At the wideſt part, the iſland, in my map, is 4 miles wider than in D'Anville's; and 9 narrower than in D'Apres'.

For the particulars of the coaſt, that part excepted which lies between Mantole and Jaffnapatam, I have copied M. D'Apres; and for the inland part, M. D'Anville.

The Maldive and Laccadive iſlands are copied from M. D'Apres.

* In 1777.

SECTION II.

The ſurveyed Tract on the ſide of BENGAL, *or that occupied by the Courſe of the* GANGES, *and its principal Branches, as far weſt as the City of* AGRA.

THIS extenſive tract, which comprizes the ſoubahs of Bengal, Bahar, Allahabad, and Oude; a large portion of Agra and Delhi, and a ſmall part of Oriſſa, is bounded on the eaſt by Aſſam, and the dominions of Ava; on the ſouth eaſt, by the gulph, or bay of Bengal; on the ſouth weſt by an imaginary line drawn from the port of Balaſore in Oriſſa, to the city of Narwah; and on the weſt by another ſuch line drawn from Narwah, through the city of Agra to Hurdwar, the place where the Ganges firſt enters the plains of Hindooſtan. It is in length from the city of Agra, to the eaſtern confines of Bengal, upwards of 900 Britiſh miles; and in breadth from 360 to 240.

With reſpect to the particulars of this ſurvey, it is unneceſſary to ſay more than that the diſtances were meaſured, and that they accorded with the obſervations of latitude and longitude: with the former minutely, and with the latter ſo nearly, that it was unneceſſary to make any correction.

Agra, by Claud Boudier's obſervation, is in -	78° 29′
Calcutta, by the medium of four obſervations	88. 28
Difference of longitude by obſervation -	9. 59
By ſurvey - - - -	9. 58

Agra, then, appears to be the moſt weſtern point determined by the ſurvey; and ſerves as a common point of union between the ſurveys on the eaſt, and the routes furniſhed by various MS. maps, and itineraries, on the north, ſouth, and weſt. By means of the ſurvey alſo, a number of points are aſcertained, which ſerve to ſet off curſory ſurveys of roads both to the weſt and ſouth: ſuch as Hurdwar and Ramgaut, on the north of Agra; and Ghod, Calpy, Chatterpour, Rewan, Burwa, and Balaſore on theſouth.

As this tract contains the ſite of the famous city of Palibothra (or Palimbothra) as well as thoſe of Canoge *, and Gour, it may not be amiſs to take ſome notice of them: as alſo of ſome of leſſer note, ſuch as Punduah, Tanda, Satgong, (or Satagong) and Sonergong: all of which, (Palibothra excepted) are mentioned either in the Ayeneh Acbaree, or in Feriſhta.

The ſituation of Palibothra has already exerciſed the judgment of M. D'Anville, who places it on the ſite of the preſent Allahabad, at the conflux of the Ganges and Jumna rivers. One principal circumſtance on which he founds his opinion, is, that Palibothra is ſaid to have been ſituated at the point of conflux of a very large river with the Ganges; a river of the third degree of magnitude amongſt the Indian rivers: the other is, that the *Jomanes* river (Jumna) according to Pliny, traverſed *the country of Palibothra*. M. D'Anville therefore concludes that the river which joined the Ganges at Palibothra, was the Jumna.

But Pliny, in another place, poſitively aſſigns for the ſite of Palibothra, a ſpot 425 Roman miles below the conflux of the Ganges and Jumna: and alſo enumerates the particulars of the whole diſtance between the Indus, and the mouth of the Ganges: and altho' his proportions do not in all caſes correſpond with the map, yet it muſt be allowed that upon the whole, there is a degree of propor-

* Or Kinnoge.

tion

tion and conſiſtency, in his account of the reſpective poſitions of places, that merits ſome degree of conſideration.

His diſtances are theſe:

From Taxila or Tapila, on the Indus (moſt probably *Attock*) to the river Hydaſpes (the modern *Behat*) 120 Roman miles.

To the Hyphaſis *(Setlege)* - -	390*	
To the Heſidrus, probably a branch of the *Caggar* river - - - -	168	336
To the Jomanes (*Jumna*) moſt probably the part neareſt to the Hyphaſis -	168	
To the Ganges (the neareſt part of which to that part of the Jumna juſt mentioned, is about Moonygurry) - -	112	
To Rhodopa - - - - 119	286	
To Calinapaxa - - - 167		
To the conflux of the Jomanes and Ganges (where Allahabad now ſtands) -	225	
To Palibothra - - - -	425	
To the mouth of the Ganges - -	638	

In order to aſcertain Pliny's ſcale, it will be neceſſary to compare his diſtances with mine in ſome known part of the above route, and none appears fitter for this purpoſe than the ſpace between that part of the Jumna neareſt to the ordinary route into Hindooſtan, and its conflux with the Ganges. This diſtance in Pliny is 623 Roman miles, and on my map 354 G. miles: ſo that $\frac{57}{100}$ of a Geographical mile is equal to a mile of Pliny's, reduced to horizontal diſtance: or about $\frac{7}{10}$ by the windings of the road: agreeing nearly with a Roman mile, for which it was doubtleſs intended.

Now, taking this for a ſcale, we ſhall find that about 110 ſuch miles will reach from the aforeſaid part of the Jumna, to that

* This is 3900 in Pliny's account; but it is evidently a miſtake of a cypher.

part

part of the Ganges neareſt to it; or about Moonygurry: 286 more will reach to Canoge; which being at the conflux of the *Calini* river with the Ganges, and alſo a large place, would make me ſuſpect that Calinapaxa * was meant for it: and 228 more will reach to the conflux of the Ganges and Jumna; that is, to Allahabad. This I think furniſhes a convincing proof that Pliny's diſtances are well proportioned to each other, as far as we have *data* for making a juſt compariſon. Between the Indus and Hyphaſis (Setlege) the proportions do not hold ſo good. For inſtance, between the Indus and Hydaſpes (Behat) Pliny reckons 120 miles; which on my map is 135 (ſuppoſing that Alexander came by Rotas, the ordinary route: for had he taken the ſame road with Timur, the diſtance would be leſs than 120). And again, between the Hydaſpes and Hyphaſis, Pliny reckons 390 miles; of which diſtance no more than 300 can be made on the map, by the ordinary route towards Sirhind; and 350 ſuppoſing he went towards the lower parts of the river; which I think highly probable, for reaſons that will be hereafter aſſigned. But as the country between the Hydaſpes and Hyphaſis, was the ſeat of war; in which Alexander was undoubtedly often led out of the direct route, it cannot be expected that this part of the diſtance ſhould be ſo well aſcertained as the others.

Between Alexander's poſition on the Hyphaſis, (Setlege) and the Jomanes (Jumna) Pliny reckons 336 miles, which exceeds the diſtance between theſe rivers in the line of the great road between Lahore and Delhi, by about 106 miles: and this diſtance is not aſcertained by the march of an army, but by order of *Seleucus Nicator*; and is therefore as worthy of belief as the account of the diſtance between the Jumna and Ganges, which was done at the ſame time. But 336 miles is really the diſtance between the Jumna and that part of the Hyphaſis (or Setlege) below the conflux

* This term I apprehend Pliny uſed, rather to convey an idea of its local poſition; than as its proper name.

of

of the Bea: which I ſuppoſe to have been Alexander's poſition when he erected his altars.

Pliny then proceeds to ſtate that Palibothra is 425 miles below the conflux of the Ganges and Jumna; and the mouth of the Ganges 638 below that; or 1063 below the conflux. It is true that this diſtance on the map is only 1000 ſuch miles by the road; but we ought to reflect, that our own ideas of this diſtance did not come nearer the truth, after we had had an intercourſe of near two centuries, with India; and indeed until the preſent time: for it will be found that M. D'Anville's map of India publiſhed in 1752, repreſents the diſtance in queſtion as much ſhort of the mark, as Pliny goes beyond it. Therefore by this account Palibothra ſhould be 425 parts in 1063, of the diſtance between Allahabad and the mouth of the Ganges; or nearly about the town of Bar, 40 miles below Patna.

We can hardly doubt after this account of Pliny's, but that *ſome very large city* ſtood nearly in the poſition which he aſſigns to Palibothra; but that this city was the capital of India, and the place viſited by the Grecian Ambaſſadors, I do by no means ſuppoſe. I rather incline to think that the city meant by Pliny, ſtood on the ſite of Patna; and that the true Palibothra was no other than Canoge, or Kinnoge, for reaſons which I ſhall preſently ſhew.

Canoge, the ruins of which are of a very great extent, was for a ſeries of ages the capital of Hindooſtan; but it is now reduced to the ſize of a middling town. It is ſituated on the right bank of the Ganges *, near the place where the Calini river (or Collynuddy) joins it. It is ſaid to have been built more than 1000 years before our æra; and is mentioned as the capital of Hindooſtan under the predeceſſor of Phoor, or Porus, who fought againſt Alexander †. The ſucceſſor of Porus, Sinſarchund (the Sandrocotta of the Greeks)

* Latitude - - - - - - 27° 5′
Longitude - - - - - - 80. 13

† Before Chriſt 326.

paid

paid a tribute to Alexander's ſucceſſors: and Jona, the ſecond in ſucceſſion from Sinſarchund, reigned at Canoge *. We have no reaſon to ſuppoſe that the capital was removed from Canoge, in the interval between the time of the predeceſſor of Porus, and the time of Jona; and therefore Canoge was without doubt the place where the Ambaſſadors of Seleucus were received, about 300 years before our æra: and this place the Ambaſſadors mention by the name of Palibothra. In point of extent and magnificence, Canoge anſwers perfectly to the deſcription given of Palibothra. The Indian hiſtories are full of the accounts of its grandeur, and populouſneſs. No longer ago than the ſixth century, it contained 30,000 ſhops, in which *beetelnut*, which the Indians, (almoſt univerſally) chew, as the Europeans do Tobacco, was ſold. There were alſo 60,000 bands of muſicians and ſingers, who paid a tax to government †. In A. D. 1018, it was ſeized on by the Gaznian emperors.

It has been ſaid that Canoge is ſituated near the conflux of the Calini river with the Ganges. This river, though not the third in magnitude amongſt the rivers of India, is yet no inconſiderable one; and as the beds of many of the leſſer rivers of that country ſpread to a very great width, the Calini might, in a ſeaſon when its bed was full, be miſtaken for a much larger river than it really is.

M. D'Anville informs us ‡ that *Eratoſthenus*, the librarian of Alexandria, under Ptolemy Evergetes, wrote, that it appeared by the meaſure of a royal route §, that the diſtance from the weſtern extreme of India to Palibothra, was 10,000 ſtadia. M. D'Anville ſays in the ſame place, that the ſtadium is the 1050th part of a degree of a great circle. Now, the diſtance from the Indus at Attock, to Canoge, is juſt 9 degrees and half, which makes 9975 ſtadia; or in

* Dowe 1ſt. 9, 10, 11. 2d edition. † Dowe 1ſt. 16. ‡ Eclairciſſemens, page 55.
§ The route of an eaſtern Prince is always meaſured, by perſons attending the camp for that purpoſe.

round numbers, as the other account is probably taken, 10,000 ¶. I think this, in ſome degree, corroborates my opinion, that Canoge is the ſame with Palibothra.

Ptolemy * places Palibothra in latitude 27°; and between the towns of *Malibi* on the weſt, and *Athenagarum* on the eaſt. The latitude given for Palibothra, is within 3 miles of that of Canoge †; and the latitudes of Maliba and Athenagarum, are nearly thoſe of Matura, and Audiah, or Oude ‡: and the proportional diſtances of the former from Palibothra, anſwer minutely to thoſe of the latter from Canoge. To this we may add, that Athenagarum is ſituated on the right bank of a large river, which joins the Ganges on the left, a great way below Palibothra; anſwering to the Gogra, or Oude river. The *Uxentius Mons*, by which the hills of Bundelcund and Bahar are evidently meant (by the circumſtance of their lying between *Panaſſa*, or Panna, and the head of the *Adamas* river, or that of Sumbulpour and Cattack) are placed about 3 degrees on the ſouth of Palibothra, or in latitude 24°; and on the north ſide of them, and within 18 miles of its true latitude § is *Panaſſa*, which, no doubt, is intended for Panna, the famous Diamond mine.

Now, as the Bundelcund hills are only 30 miles from Allahabad, and near 2 degrees from Canoge, it appears improbable that Allahabad ſhould be the place meant for Palibothra; although it is highly probable that Canoge may.

I am of opinion that ſome reliance may be placed on Ptolemy's latitude of Palibothra; for on a compariſon of the latitudes of five different places between the Indus and Ganges, I find the greateſt

* Aſiæ, Tab. X.

† Palibothra -	27° —	——	Canoge -	27° 3′
‡ Maliba - -	27. 30′	——	Matura -	27. 34
Athenagarum -	27. 0	——	Oude -	26. 46
§ Panaſſa - -	24. 30	——	Panna -	24. 48

¶ The ſame *Eratoſthenus* computes the extent of India from the ſource of the Indus, to its mouth, at 13,000 ſtadia; which, according to the above ſtandard, makes about 12 degrees and a third. As the ancients reckoned the weſtern branch of this river, which riſes in the mountains of *Hindoo-Ko* (the *Indian Caucaſus*) the true Indus, this computation will be found to be pretty juſt.

difference

difference to be only 12 minutes *, between his latitudes and mine. It muſt not be forgotten, that the country between Panjab and Palibothra, was the part of India, of all others the beſt known to the ancients.

Gour, called alſo Lucknouti, the ancient capital of Bengal, and ſuppoſed to be the *Gangia regia* of Ptolemy, ſtood on the left bank of the Ganges, about 25 miles below Rajemal †. It was the capital of Bengal 730 years before Chriſt ‡ and was repaired and beautified by Acbar §, who gave it the name of Jennuteabad; which name, a part of the circar in which it was ſituated, ſtill bears. According to Feriſhta's account, the unwholeſomeneſs of its air, occaſioned it to be deſerted ſoon after ‖; and the ſeat of government was removed to Tanda, or Tanrah, a few miles higher up the river.

No part of the ſite of ancient Gour is nearer to the preſent bank of the Ganges than four miles and a half; and ſome parts of it, which were originally waſhed by that river, are now 12 miles from it. However, a ſmall ſtream that communicates with the Ganges, now runs by its weſt ſide, and is navigable during the rainy ſeaſon. On the eaſt ſide, and in ſome places within two miles, it has the Mahanada river; which is always navigable, and communicates alſo with the Ganges.

Taking the extent of the ruins of Gour at the moſt reaſonable calculation, it is not leſs than 15 miles in length (extending along the old bank of the Ganges) and from 2 to 3 in breadth. Several villages ſtand on part of its ſite: the remainder is either covered with thick foreſts, the habitations of Tygers and other beaſts of prey;

	Ptolemy.		New Map.	Difference.
* Taxila, the paſs on the Indus or Attock	32° 20′	Attock	32° 20′	0′
Conflux of the Hydaſpes and Indus	30. 0	——	29. 48	12
Malæta	25. 54	Meerta	25. 50	4
Ardone	30. 12	Ajodin	30. 15	3
Dædalla	30. 32	Debalpour	30. 24	8

† Latitude 24° 53′ lon. 88° 14′. ‡ Dowe 1ſt. 6. § 1575.

‖ This is Feriſhta's account; but ſome of its preſent inhabitants told me that it was deſerted in conſequence of a peſtilence.

or become arable land, whoſe ſoil is chiefly compoſed of brick duſt. The principal ruins are a moſque lined with black marble, elaborately wrought; and two gates of the citadel, which are ſtrikingly grand and lofty. Theſe fabricks and ſome few others, appear to owe their duration to the nature of their materials, which are leſs marketable, and more difficult to ſeparate, than thoſe of the ordinary brick buildings; which have been, and continue to be, an article of merchandize; and are tranſported to Moorſhedabad, Mauldah, and other places, for the purpoſe of building. Theſe bricks are of the moſt ſolid texture of any I ever ſaw; and have preſerved the ſharpneſs of their edges, and ſmoothneſs of their ſurfaces, through a ſeries of ages. The ſituation of Gour was highly convenient for the capital of Bengal and Bahar, as united under one government: being nearly centrical with reſpect to the populous parts of thoſe provinces; and near the junction of the principal rivers that compoſe that extraordinary inland navigation, for which thoſe provinces are famed: and moreover, ſecured by the Ganges and other rivers, on the only quarter from which Bengal has any cauſe for apprehenſion.

Tandah *, Tanrah, or Tarrah, which was for a ſhort time in the reign of Shere Shaw, in about 1540, the capital of Bengal, and became the eſtabliſhed capital under Acbar in about 1580, is ſituated very near to the ſite of Gour, on the road leading from it to Rajemal. There is little remaining of this place, ſave the rampart; nor do we know for certain when it was deſerted. In 1659, it was the capital of Bengal, when that ſoubah was reduced under Aurungzebe: and Rajemal, Dacca, and Moorſhedabad, appear to have ſucceſſively become the capital, after Tanda.

* Called ſometimes Chawaſpour Tanda, from the original name of the diſtrict in which it was ſituated.

Pundua,

Pundua, or Purruah, mentioned as a royal reſidence in Bengal, in the year 1353 *, is about 7 miles to the north of Mauldah, and 10 from the neareſt part of Gour. Many of its ruins yet remain; particularly the Addeenah moſque, and the pavement of a very long ſtreet, which lies in the line of the road leading from Mauldah to Dinagepour.

Satgong, or Satagong, now an inconſiderable village on a ſmall creek of the Hoogly river, about 4 miles to the north weſt of Hoogly, was, in 1566, and probably later, a large trading city, in which the European traders had their factories in Bengal. At that time Satgong river was capable of bearing ſmall veſſels; and, I ſuſpect, that its then courſe, after paſſing Satgong, was by way of Adaumpour, Omptah, and Tamlook; and that the river called the old Ganges, was a part of its courſe, and received that name whilſt the circumſtance of the change was freſh in the memory of the people. The appearance of the country between Satgong and Tamlook, countenances ſuch an opinion.

Sonergong, or Sunnergaum, was a large city, and the provincial capital of the eaſtern diviſion of Bengal, before Dacca was built; but it is dwindled to a village. It is ſituated on one of the branches of the Burrampooter, about 13 miles ſouth eaſt from Dacca; and was famous for a manufacture of fine cotton cloths.

* Dowe 1ſt. 340.

SECT.

SECTION III.

The Tract occupied by the Courſe of the River INDUS *and its principal Branches: with the adjacent Countries on the South and Eaſt, as far as the River* PUDDAR, *and the City of* AGRA.

THIS part comprehends in general the ſoubahs of Cabul, Lahore (or Panjab) Moultan, Sindy, Agimere, and the weſtern parts of Agra and Delhi: and is about 700 B. miles in length from north weſt to ſouth eaſt; and from 350 to 750 in breadth. It is bounded on the eaſt, by the mountains of Little Thibet, and Sewalick, and by an imaginary line drawn from Hurdwar to Agra; on the ſouth, by the river Puddar; on the weſt, by the Arabian ſea, and Perſia; and on the north, by the mountains called *Hindoo-Ko*, which ſeparate Cabul from Bucharia in Tartary.

Delhi, the capital of Hindooſtan in latter ages *, is 40 computed coſſes to the north weſt of Ramgaut, a point aſcertained by the Bengal ſurvey: and its latitude, according to Claud Boudier, is 28° 37′. This *Data* places Delhi in 77° 45′ eaſt longitude, which is only 5 minutes different from Claud Boudier's obſervation (77° 40′) Beyond Delhi, weſtwards, we launch, as it were, into a wide ocean, in which we have no points determined mathematically, by which we can aſcertain the length and direction of the route; except the computed diſtances between places, and ſome latitudes and longitudes, taken with little preciſion, if we may judge by a compariſon of ſome of the obſervations from the ſame catalogue, with thoſe

* We firſt hear of Delhi as the capital of Hindooſtan about the year 1200. It is ſuppoſed to have been founded by Delu, about 300 years before our Æra. It ſhould be written *Dehly*.

taken

taken by Europeans. For inſtance, the latitude of Jionpour and Burhanpour are from 21 to 25 miles too far north, in the Ayeneh Acbaree; Oude, 35 too far north; and Delhi, 22 too far ſouth. We have therefore little reaſon to ſuppoſe that any of the others are much nearer the truth; nor have we any rule to gueſs on which ſide the error lies. The longitudes are ſtill more vague; as for inſtance:

	By the A. A.	By the Map.	Difference.
The difference of longitude between Delhi and Oude is -	3° 28′	4° 43′	1° 15′
Delhi and Jionpour - -	4. 28	5. 8	0. 40

Here the medium of the difference is 12 minutes too little, in each degree.

And again:

Delhi and Tatta - -	12° 8′	10° 8′	2° 0′
Delhi and Lahore - -	5. 16	4. 12	1. 4
Delhi and Moultan - -	7. 3	6. 35	0. 28
Delhi and Cabul - -	9. 58	8. 16	1. 42

In theſe places, altho' the longitudes in the map are not determined with preciſion, we may ſtill perceive that the Ayeneh Acbaree is much out. The difference on a medium here is 11′ in each degree too much. From ſuch kind of materials, nothing very accurate can be expected: and therefore I have never had recourſe to them but in a very few caſes, where every other ſpecies of information has failed.

The firſt point beyond Delhi which I have any kind of *data* for fixing the poſition of, is Lahore, a capital city in the Panjab *, and formerly a royal reſidence. This place is ſaid by Tavernier to be

* Panjab, or *the country of the five rivers*, is a natural diviſion of the country contained between the 5 eaſtern branches of the Indus.

191 coſſes from Delhi; and by a MS. itinerary (of John Steel, dated 1614) 189. The medium, 190 coſſes, taken at 42 to the degree, is 271 G. miles. Its latitude in the Ayeneh Acbaree, is 31° 50′, in another Indian table 31° and in a Latin MS. itinerary, dated 1662, 30° 30′ *. The medium of theſe three accounts is about 31° 7′, but I have placed it in 31° 14′, as that poſition accords beſt with my idea of the diſtance between it and Moultan; and with reſpect to its longitude, it is determined by the aforeſaid diſtance of 271 G. miles from Delhi, to be in 73° 33′.

Lahore is a very important point to be ſettled, as it regulates the poſitions of all the places between it and the Indus: and therefore we have reaſon to regret that we have not better authority for fixing it. The Ayeneh Acbaree places it 1 degree 4 minutes to the weſt of its aſſumed poſition, which could not be the caſe, even if its whole diſtance from Delhi was in longitude. The ſituation of Sirhind, which is nearly midway between Delhi and Lahore, is regulated by a MS. itinerary. It is a very ancient city, and lies near the confines of Lahore.

The country in general on the north, ſouth, and weſt of Delhi, to the frontiers of Lahore, Moultan, and Agimere, is deſcribed from various MSS. and memorandums: but it would be very tedious, and of little uſe, to enumerate every particular that has been taken from them, or to quote my authority for ſo doing.

I am not perfectly clear concerning the courſe of the Caggar river (called *Kehker* by D'Anville, and apparently the ancient Heſidrus). That branch of it which runs by Tanaſſerai, or Tannaſar, is mentioned by Ferishta under the name of Surſutty. We muſt be content to remain in ignorance concerning both this, and many other particulars of Indian geography; and ſatisfy ourſelves with having the ſituations of places that are the moſt intereſting, either from

* It ſhould be obſerved, that all the latitudes in this itinerary are too far ſouth. The latitude of Agra is ſet down at 26° 45′, tho' its true latitude is 27° 15′. And Moultan in 29° 32′, and Tatta in 24° 20′; which places are commonly taken at 29° 52′, and 24° 40′.

having been the ſubjects of hiſtory, or as being connected with the politics of preſent times.

The Jidger, or river of Mewat, * and which has no exiſtence in any map that I have ſeen, appears, by Feriſhta's account, to riſe in the weſtern parts of the ſoubah of Delhi, and to run eaſtward. This is ſtrongly implied in Dowe's tranſlation (Vol. I. page 327). He ſays that "Sultan Firoſe made a canal of 100 miles, from the Suttuluz (or Setlege) to the Jidger." This was doubtleſs with a view to join the inland navigations of the Ganges and Indus; and was a noble, as well as an uſeful, deſign †. The river that runs by Fattipour, and falls into the Jumna below Agra, is named Jago in ſeveral maps, both printed and MS. but is deſcribed as coming from Agimere. I ſuppoſe this to be Jidger, and have accordingly deſcribed it as ſuch. Cottilah, the capital of Mewat, is not far from its banks.

Tiberhind, a fortreſs and province often mentioned by Feriſhta, is placed according to the implied ſituation aſſigned it by that author. The ſame may be ſaid of Nagore in Agimere; Haſſi, Koram, Surſutti and Cottilah.

The next place, in point of conſequence to the conſtruction of this part of the map, is Attock, a city and fortreſs on the eaſt ſide of the Indus or Sinde. The ſituation of this place is fixed by its bearings and diſtances from Lahore, as given in a MS. map of Panjab, (of which I ſhall ſpeak more fully hereafter) and the diſtance agrees alſo with Tavernier's account, which reckons 119 coſſes between them. It is remarkable that M. D'Anville's poſition

* Mewat is the hilly tract on the weſt of the Jumnah, between Delhi and Agra; poſſeſſed by the Jats.

† By a ſlight inſpection of the map, it will appear that this project, would, if the ground permitted of its being ſucceſsfully put into execution, be one of the greateſt undertakings of the kind that ever was projected; that of cutting thro' the iſthmus of Suez, only excepted. We ſhould then have ſeen two capital rivers, which traverſe a large part of the continent of Aſia; which enter the ſea at 1500 B. miles aſunder; and which ſtretch out their arms as it were, to meet each other; united by art, ſo as to form an uninterrupted inland navigation from Cabul to Aſſam! I take it for granted that this canal was never completed, otherwiſe we ſhould have heard more of it, as we have of the canals leading from the Jumna.

of this place, does not differ 10 miles from the poſition I have aſſigned it; although we differ conſiderably in the detail of the route between it and Delhi.

Moultan *, the capital of the ſoubah of the ſame name, has its latitude given at 29° 52′ in the Ayeneh Acbaree, and in other tables; 29° 32′, by the Latin itinerary abovementioned, and 29° 40′, according to Thevenot. I have taken the medium, and placed it in 29° 41′. With reſpect to its longitude, I have no tolerable data for it. The Ayeneh Acbaree makes it 7° 3′ weſt from Delhi; but we have already had occaſion to remark, how little dependence is to be placed on the Indian tables of longitude. The MS. map of Panjab ſpecifies in a written note, that the whole diſtance between Lahore and Moultan is 90 coſſes; but does not give the diſtance between the ſtages, as in other parts of the map. On the other hand, Mr. John Steel, in his Itinerary, reckons the diſtance 144 coſſes, and gives the diſtances between the ſtages; but the road is evidently a different one from that deſcribed in the MS. map. Here is a difference in the two accounts, of more than one third part, ſuppoſing Mr. Steel to have gone the direct road; and there is nothing appears to the contrary. It is a misfortune that we have no account of the diſtance on the great road from Delhi to Moultan, by way of Debalpour; which, together with the help of the latitude, would have given the longitude in a ſatisfactory manner.

There is no poſſibility of reconciling the two accounts of 90 and 144 coſſes; and therefore I have rejected them both, and have had recourſe to the bearings and proportional diſtances between Lahore, Attock, and Moultan, in the MS. map of Panjab †. Moultan, there, bears a little to the eaſtward of ſouth, from Attock; and about 60 degrees to the weſtward of ſouth, from Lahore. And

* Suppoſed to be the *Malli* of Alexander.

† Thevenot reckons it "*threeſcore and odd leagues*," or about 120 coſſes; but his account is vague.

the diſtance between Attock and Moultan, is exactly equal to that between Moultan and Lahore; which, according to the above bearings, and the latitude of Moultan, is about 110 coſſes. This, then, is the poſition of Moultan in the map; the longitude of which is 71° 10′, or 6° 35′ weſt of Delhi; that is, 28 minutes leſs than what is ſpecified in the Ayeneh Acbaree. M. D'Anville places Moultan and Attock, in reſpect to each other, ſo exactly as I have done, that I have been able to preſerve all his geography of Cabul and Candahar, together with the courſe of the Indus above Moultan, without any alteration of ſcale or bearing. The truth is, that I have no materials, of a quality proper to correct radically the Geography of thoſe countries; for the latitudes and longitudes in the Perſian tables will by no means effect it. But though I do not think myſelf authoriſed to correct it, yet by what has appeared to me, during the inveſtigation of the ſubject, I believe that both Cabul and Candahar are farther to the weſt, by at leaſt a degree, than M. D'Anville has placed them, though probably not ſo far as is given in the Ayeneh Acbaree.

The diviſions of Cabul, &c. that appear in my map, are chiefly from the Ayeneh Acbaree. The routes from Candahar to Cabul and Attock, are from Tavernier; and that from Candahar to Moultan, from Mr. Steel. Beſides theſe, I have introduced a few places, and corrected the names of others. But for the whole ground work of the countries weſt of the Indus, as well as the river itſelf, I am indebted to M. D'Anville.

The river called by Europeans Indus *, and by the natives generally Sinde (or Sindeh) is formed of about 10 principal ſtreams which deſcend from the Perſian and Tartarian mountains, on the north eaſt, and north weſt. The Ayeneh Acbaree deſcribes its ſource as being in Caſhgur and Caſhmere; by which it appears

* Nilab is a name ſometimes applied to the Indus by Feriſhta, and other Indian hiſtorians: however, I apprehend that the Nilab is one of the weſtern branches of the Indus, and runs under Irjab and Nagaz.

that the people of Hindooſtan conſider the north eaſt branch as the true Sinde. From the city of Attock, in about latitude 32° 20′, downwards to Moultan, it is commonly named the river of Attock, which in the Hindooſtan language, imports *forbidden*; probably from the circumſtance of its being the original boundary of Hindooſtan on the north weſt; and which it was unlawful for the ſubjects of Hindooſtan to paſs over, without ſpecial permiſſion. Below the city of Moultan, it is often named Soor, or Shoor, until it divides itſelf into a number of channels near Tatta; where the principal branch takes the name of Mehran. The river, however, when ſpoken of generally, is called Sinde, altho' particular parts of it are known by different names. The courſe of the Indus below Moultan, has its particulars from M. D'Anville; but the general direction of its courſe, is conſiderably more to the weſt, than he deſcribes it. This is occaſioned by my placing its *embouchure* ſo much farther weſt than uſual, in reſpect of Bombay (ſee page 28) whilſt the poſition of Moultan remains nearly as it formerly was. I obſerve that moſt of the old maps of India give the Indus much the ſame courſe as I have done.

The Latin Itinerary beforementioned, gives the names of many places, and ſome latitudes, on the Indus. It places the fortreſs and city of Bhakor, which the Ayeneh Acbaree ſays, is the ancient Manſurah (though D'Anville ſays the contrary) in latitude 27° 12′; Tatta in 24° 20′; and Bunder Lawry *, in 24° 10′. All theſe, I take to be from 20 to 30 minutes too far ſouth.

Moultan is about the ſame diſtance from the ſea, as Allahabad; that is, about 800 B. miles by the courſe of the river; and our author was 21 days in dropping down with the ſtream, in the months of October and November; when the ſtrength of the land floods were abated.

The boundaries of the provinces of Moultan and Sindy on the weſt, extend a conſiderable way beyond the bank of the river; that

* Called alſo Bunder Laheri.

is

is to ſay, from 50 to 100 miles. The country is in general flat and open from Moultan to the ſea; and the province of Tatta itſelf (the *Patale* or *Patala* of Alexander) is ſaid to reſemble Bengal, not only in the flatneſs of its ſurface, richneſs of ſoil, and periodical inundations; but alſo in the food of its inhabitants, which is chiefly rice and fiſh. The ſite of the ancient capital, Homnabad, is near Tatta; and, in the time of Acbar, ſome conſiderable ruins of it were remaining: particularly the fort, which is ſaid to have had an aſtoniſhing number of Turrets to it. Tatta is made ſynonymous to Daibul, in the Perſian tables (which were obligingly lent me by Mr. Jones, and are thoſe mentioned in his preface to Nadir Shaw) where it is placed in 24° 10′. The Latin Itinerary ſays 24° 20′, and D'Anville 24° 40′.—I have placed it, according to its reputed diſtance from the mouth of the Sinde, which brings it to 24° 45′ *.

I return now to the country of Panjab, or that watered by the fine eaſtern branches of the Indus. Here ſome new matter offers; having before me, a map of this country drawn by a native, and preſerved in the archives of government in Hindooſtan. The names were obligingly tranſlated by Mr. Davy, at the requeſt of Sir Robert Barker. The tract, of which this map ſerves as a ground work, is a ſquare of about 250 B. miles; and includes the whole ſoubah of Lahore, and a great part of Moultan proper. The points of Lahore, Attock, and Sirhind (the fixing which, I have before given an account of) determine the ſcale of the map; the intermediate diſtances from place to place in it being given in writing, and not by a ſcale.

I conſider this MS. as a valuable acquiſition; for it not only conveys a diſtinct idea of the courſes and names of the five rivers, which we never had before: but ſets us right as to the identity of

* Pliny reckons the length of the Patale, or Delta of the Indus, at 220 Roman miles; in which he was very near the truth, it being about 210.

the

the rivers croſſed by Alexander, during his famous expedition into India; of which more will be ſaid hereafter.

Beſides the places found in this map, I have inſerted others, from the authority of the Ayeneh Acbaree; ſeveral from implied ſituations in Feriſhta; others from Sherifeddin's hiſtory of Timur *; (particularly his march from Toulouba to Adjodin and Batnir) and others from various MSS. in my poſſeſſion. The diviſion of the country, is entirely from the Ayeneh Acbaree.

The town of Adjodin, often mentioned by Feriſhta, and Sherifeddin, is recognized in the MS. map, by the circumſtance of its containing the tomb of Sheik Furrid, which was viſited by Timur. In the map it is called *Paukputton*; but it perfectly anſwers to the poſition of Adjodin, as deſcribed by the above authors; and is a point, on the fixing of which a great many others depend.

The next river to the eaſt of the Sinde, or Attock, and the the weſtmoſt of *the five rivers*, is, in modern language, called Behat, or Chelum; whoſe general courſe is nearly parallel to that of the Attock, but its bulk is leſs. This is the famous Hydaſpes of Alexander, and ſaid by the Ayeneh Acbaree to be anciently called *Bediſta*. It runs through Caſhmere, and was ſuppoſed by M. D'Anville (tho' erroneouſly) to join the Sinde at Attock. Tavernier ſeems to have led M. D'Anville into this miſtake; which has finally been the occaſion of miſplacing, and of courſe miſnaming, all the other four rivers.

The ſecond river is the Jenaub, or Chunaub; and is the Aceſines of Alexander. The third is the Rauvee, or Hydräotes of Alexander; on the ſouth bank of which ſtands the city of Lahore. Theſe three rivers ſucceſſively unite with each other at ſome diſtance above Moultan; and form a ſtream equal to the Indus itſelf. Its rapidity and breadth are particularly remarked by the hiſtorians of Alexander and of Timur.

* Tranſlated by M. de la Croix.

The

The fourth river is the Beah, or Biah; and the fifth is the Setlege, or Suttuluz. Theſe two rivers unite about midway between their ſprings, and their junction with the Indus; and their mixt waters properly bear the name of Setlege. Some authors, Sherefeddin in particular, call it Biah; and from the indiſcriminate uſe of the two names, much confuſion has ariſen *.

The Setlege, thus formed by the joint waters of the two rivers, is the Hyphaſis of Alexander, and is a very conſiderable river, being navigable 200 miles above its conflux with the Indus. It paſſes on the ſouth of, and not far from, the city of Moultan; and about 80 miles below it, according to the Latin Itinerary, it falls into the Indus.

The Panjab country having been in the route of the three great conquerors, Alexander, Timur (or Tamerlane) and Nadir Shaw; it may not be amiſs in this place to trace the line of their routes †.

I take it for granted, that Alexander croſſed the Indus ‡ at the place where the city of Attock now ſtands; as it appears to have been in all ages, the paſs on the Indus, leading from the countries of Cabul and Candahar, into India: and this is ſtrongly indicated by the circumſtance of Acbar's building the fortreſs of Attock, to command it. Mr. Fraſer, in his hiſtory of Nadir Shaw, ſays, "there is but one place where an army can conveniently be tranſ-"ported, the ſtream being ſo rapid in moſt parts. There is a "caſtle commanding that paſſage, called the caſtle of Attock." Attock then, muſt ſtand on the ſite of the Taxila of Alexander. From thence, as his intention appears to have been to penetrate

* The modern European Geographers have added to theſe names, thoſe of Caul and Dena. Ptolemy calls it Zaradrus.

† I purpoſely omit the name of Turmechirin Cawn, a deſcendant of Gengis, or Zingis Cawn, who made an irruption into Hindooſtan about the year 1240; becauſe the particulars of his route are wanting. Sherefeddin mentions, in one place, that he croſſed the Jenaub at Toulouba; and in another, that he beſieged the city of Merat in the Dooab—But Feriſhta confines the exploits of this deſcendant of Zingis (for his name is not mentioned) to the Panjab country.

‡ About 326 years before Chriſt.

by

by the ſhorteſt way to the Ganges, he would proceed by the ordinary road to that part of the bank of thc Hydaſpes (Behat) where the fortreſs of Rotas now ſtands; and here he put into execution his ſtratagem for croſſing the river, whilſt the oppoſite ſhore was poſſeſſed by Porus. After croſſing the Aceſines (Jenaub) and Hydraotes (Rauvee) which latter he may be ſuppoſed to croſs at the place where Lahore now ſtands, he appears to be drawn out of the direct route towards the Ganges, to attack the city of Sangala, or Sagala, moſt probably lying between Lahore and Moultan. From Sangala, he proceeded to the river Hyphaſis (Setlege) moſt probably between Adjodin and Debalpour, by the circumſtance of the *deſerts* being between him and the Ganges. For the country between the Beah and the Ganges, is fertile and well inhabited; but that between the lower parts of the Setlege and the Ganges, has really a deſert in it; as Timur experienced in his march from Adjodin to Batnir. The diſtance between Alexander's poſition on the Hyphaſis (Setlege) and the Jumna (as given by Pliny) accords with this opinion. He gives it at 336 Roman miles; which, by a proportional ſcale formed from his diſtances in known places, reaches from the banks of the Jumna, to a point a little below the conflux of the Beah and Setlege *. But had Alexander been as high up the river, as the place where the great weſtern road croſſes from Lahore to Delhi, he would have been only 230 ſuch miles from the Jumna.

This opinion is (I think) yet farther ſtrengthened, by the account of what happened immediately after: I mean, his recroſſing the Hydraotes (Rauvee) and then incamping on the bank of the Aceſines (Jenaub) in a low ſituation, and where the whole country was flooded, on the coming on of the periodical rains; which circumſtance obliged him to move his camp higher up the river, into a more elevated country. This agrees perfectly with the deſcriptions of the country. The lower parts of the courſes of the Je-

* See page 38.

naub

naub and Rauvee are really through a low country; and thoſe are alſo the parts neareſt to Adjodin, and Debalpour; between which places, I ſuppoſe, Alexander's altars were erected. How much higher up he removed, may be judged by the circumſtance of his fleet's being five days in dropping down from the encampment, to the conflux of the Hydaſpes and Aceſines (Behat and Jenaub) for as the length of the voyage from Lahore to Moultan is 8 days, at the ſame ſeaſon of the year, we may place the ſite of the encampment about 20 miles below the town of Gujerat. Here he embarked, and proceeded to Malli, doubtleſs Moultan; and poſſibly the famous city of the Oxydracæ, in the eſcalade of which, Alexander was expoſed to ſo much danger, may be the preſent Outch, or Atcha; now included in the Moultan province. From thence, his courſe was down the Indus, to Patala (the preſent Tatta) where he and Nearchus ſeparated; the firſt to conduct the army thro' the deſerts, to Perſepolis; and the latter to conduct the fleet along the Perſian coaſt, to the Euphrates *.

The next conqueror, in order of time, is Timur, or Tamerlane. He, I apprehend, alſo croſſed the Indus † at the place where Attock now ſtands (and not at Shehinkot, or Dincot, as ſome have ſuppoſed) and my reaſon for thinking ſo is, that immediately after his croſſing it, the Chiefs of the Jehud, or Joud Mountains (called *Coudgioud* by de la Croix) made their ſubmiſſions to him; which they would hardly have done, had he not been on the confines of their country. The Jehud Mountains are thoſe which extend from Attock, eaſtward to Benbur, or Bember ‡.

Timur's

* It may appear extraordinary that Alexander ſhould, in the courſe of a few months, prepare ſo vaſt a fleet for his voyage down the Indus; eſpecially as it is ſaid to be the work of his army. But the truth is, that the Panjab country, like that of Bengal, is full of navigable rivers; which, communicating with the Indus, form an uninterrupted navigation from Caſhmere to Tatta: and, no doubt, abounded with boats and veſſels ready conſtructed to the conqueror's hands. I think it probable, too, that the veſſels in which Nearchus performed his coaſting voyage to the gulf of Perſia, were found in the Indus. Veſſels of 180 tons burthen are ſometimes uſed in the Ganges; and thoſe of 100 not unfrequently.

† Over a bridge of Boats, about the middle of October 1398.

‡ My opinion is (I think) farther ſtrengthened by a remark in the MS. map of Panjab. A mountain near the Indus, a very little below, and on the oppoſite ſide to Attock, is marked

Timur's firſt object after croſſing the Indus, being to effect a junction with his ſon Peer Mahmud's army, which was then beſieging Moultan, he directed his courſe that way, inſtead of taking the common road to Delhi, by Rotas and Lahore. The neighbourhood of a navigable river, being a deſireable object to an army marching through a dry ſterile country, he puſhed for the neareſt part of the Behat, or Chelum river (the Hydaſpes of Alexander) where he attacked and took the fortreſs and iſland of Shab-ul-dien. After this, he marched 5 or 6 days along the banks of the Behat, till he came to the place where the Jenaub joins it. The meeting of theſe rivers, as has been ſaid before, form a rapid and troubled ſtream: however, it did not prevent Timur from throwing a bridge over it. The town of Toulonba, or Tulmabini, is ſituated on the eaſtern ſide of the confluence †, and here he halted 6 days. About a days march from Toulonba, he croſſed the Rauvee ‡ at Jengian, near Shawnawaz ‖; and here he was joined by Peer Mahmud, who had, by this time, taken Moultan. From the banks of the Rauvee, the whole army croſſed the Baree Doabah § to Jehaul, near the river Setlege, where it ſeparated; Timur proceeding with a detachment to attack Batnir; and the grand army and baggage by way of Debalpour to Sammana, a Town on the Caggar river, about 60 coſſes weſt from Delhi; where a general rendezvous was appointed.

Timur, after leaving Jehaul, proceeded firſt to Adjodin, or Paukputton ¶, on the Setlege. Here he viſited and ſpent ſome

Mount Yulluleah (or Gelali) moſt probably from its being the place from whence the Emperor Gelali croſſed the Indus, in his flight from Gengis Cawn in 1221. When Timur had croſſed to the eaſt ſide of the Attock, or Indus, he was ſaid to be arrived in the *Deſert of Gelali:* therefore I have no doubt but that they both croſſed nearly at the ſame place. Gengis Cawn remained on the weſt ſide of the river.

† Thirty-five coſſes above Moultan, according to Sherefeddin.

‡ Falſely called the Bea, by Feriſhta and Sherifeddin.

‖ Forty coſſes above Moultan, according to Sherefeddin.

§ See the word Doabah, or Dooab, explained in page 7.

¶ Called alſo by Feriſhta and Sherefeddin, Palan Shuckergunge.

time

time at the tomb of Sheik Furrid *, and then *croſſing the deſert*, came to Batnir, after a march of 60 coſſes from Adjodin.

After taking and deſtroying Batnir, which employed only a few days, he marched on the 30th of November, taking nearly the ſtraight road to Sammana, by way of Firouz, Suruſti, Amirani, and Mounec; arriving at Sammana and joining his grand army the 8th of December †.

The march from Sammana to Delhi, though only 60 coſſes, appears to have taken up from the 8th to the 24th of December; including four days halt.

Returning from Delhi, Timur made an excurſion to the north eaſt, took the city of Merat, or Mevat ‡, 28 coſſes from Delhi, and advanced to the Ganges, near the place where it iſſues out of the Sirinagur mountains. Toglocpour, and the ſtraits of Cupele, two places of victory on the eaſtern bank of the river, cannot now be recogniſed: but from Sherefeddin's account of the march, they cannot be far from Loldong; where the Britiſh army compleated their campaign in 1774, 1100 Britiſh miles from Calcutta ||.

From the banks of the Ganges, he proceeded to the northweſt, along the foot of the Sewalick mountains, by Meliapour, Jallindar, and Jimmoo, to the frontiers of Caſhmere: and from Caſhmere, acroſs the mountainous and deſert country of the Kakares §, to the Indus, which he croſſed at the ſame place as before, and in the ſame manner; and returned to Samarcand by way of Banou, Nagaz, Kermudge, Cabul, Bacalan, and Termed.

Nadir Shaw's route was the ordinary one, by Attock and Lahore; and, I apprehend, he returned the ſame way.

* See page 54.

† The interval on the map between Batnir and Samana, is about 83 coſſes. It is not eaſy to collect the diſtance from Sherefeddin's account of Timur's marches: but we find he was eight days on the march.

‡ Called Mirte by de la Croix.

|| At the time of Timur's conqueſt (1398) the Britiſh nation had ſcarcely been announced to the people of Hindooſtan; nor was it till 200 years afterwards, that they found their way thither. Who could have believed that the Britiſh conqueſts would meet thoſe of Tamerlane, in a point equidiſtant from the mouths of the Ganges and Indus, in 1774?

§ The Gickers of Dowe.

I now return to the account of the conſtruction of the map.

Between the Puddar river, Agimere, Moultan, and the Indus, is an extenſive deſert, in which is ſituated the fort of Ammercot, or Omircout, the birth place of Acbar, and the retreat of Khodaiar *. I think it improbable that ever we ſhall have any geographical knowledge of any of the inland parts, between the Puddar and Indus, more than the very vague information contained in the Indian hiſtories. The river Puddar, from the length of its courſe, promiſes to be navigable; and, probably, it is more from the want of uſeful products on its banks, than from the ſhallowneſs of its channel, that it has continued ſo long unexplored by Europeans.

The poſition of Joinagur on the Puddar is inferred from Feriſhta; and Radimpour from a MS. Itinerary from Cambay to Tatta; of which however, I can at preſent make no farther uſe. The author reckons 220 coſſes between Amedabad and Tatta, going by way of Radimpour; which agrees very nearly with the diſtance on the map.

The road from Agimere to Jaſſelmere, is from M. D'Anville; and from Jaſſelmere to Moultan, from a MS. map. The road from Batnir to Sammana and Panniput, is from M. de la Croix's hiſtory of Timur.

Caſhmere, is according to D'Anville, who has improved on Bernier. I ſuſpect that this country, which is properly a circar of Cabul, extends much farther to the north and north eaſt, than we have hitherto imagined: for the Ayeneh Acbaree makes the Jenaub river its eaſtern boundary, and the Kiſhen river its weſtern boundary; and ſays that its length is 120 coſſes.

* Jones's Nadir Shaw.

SECT.

SECTION IV.

The Tract ſituated between the KISTNA *River, and the Countries traverſed by the Courſes of the* GANGES *and* INDUS, *and their principal Branches: that is to ſay, the middle Parts of* INDIA.

THIS very extenſive tract is bounded on the north eaſt by the ſoubahs of Bengal, Bahar, Allahabad, and Agra; on the N. W. by the courſe of the river Puddar; on the eaſt and weſt by the ſea; and on the ſouth by the river Kiſtna, or Khriſhnah: and comprehends in general the ſoubahs of Guzerat, Malwa, Berar, Oriſſa, Candeiſh, Amednagur (or Dowlatabad) Viſiapour (or Bejapour) and Golconda. It is about 800 Britiſh miles in length from N. W. to S. E.; and 600 wide: and has in and about it, many points that are determined either by obſervations of latitude and longitude, or inferred from ſuch points, by the means of good charts.

The fundamental points on which the conſtruction and ſcale of this part depend, are as follows:

On the north and N. E. Agra, as determined by obſervation and ſurvey *; and Calpy, Chatterpour, Rewan, Burwah, and Balaſore, inferred from meaſured lines drawn from other places of obſervation. On the ſouth Maſulipatam, as determined by Capt. Ritchie †. On the weſt, Bombay, by the obſervations of Mr. Howe, and of Mr. Smith ‡; and Surat, Cambay, and Diu Point, inferred from charts and ſurveys ‖. In the interior parts Narwah, Sirong,

* See page 36. † See page 21. ‡ See page 25. ‖ See page 27.

and

and Poonah, by obſervations of Mr. Smith, or by inference from them.

The conſtruction of the ſea coaſts, on both ſides of this tract, has been already diſcuſſed *: and I ſhall begin my account of that of the inland parts, with Mr. Smith's line acroſs from Calpy to Bombay.

He ſet out from Calpy with Col. Upton in 1776 †, and fell into the great road from Delhi to the Deccan, at the city of Narwah; which is ſituated on the river Sindah, near the entrance of a famous paſs, noted in the Ayeneh Acbaree by the name of *Burra Diury*, but called in Mr. Smith's map, *Lellymudge*. From Narwah, he proceeded to Sirong, a city of Malwa, ſubject to Madagee Sindia: and from thence to Burhanpour, the capital of Candeiſh, and formerly of the Deccan. This is yet a flouriſhing city; and it is ſituated in a delightful country. In his way to this place from Sirong, he croſſed the famous river Nerbuddah; formerly the reputed boundary of the Deccan, to the north. From Burhanpour, he went to Poonah, the capital of the Mahratta empire, croſſing the heads of the Godavery and Beemah rivers in his way: and from Poonah to Bombay. During all this route, he took obſervations of latitude and longitude, as often as opportunity offered; which was not unfrequently: and with theſe, together with the intermediate bearings of the road, he conſtructed a map, which is no leſs valuable on the ſcore of its general accuracy, and extenſive information; than curious, by the novelty of its ſubject. We had then, for the firſt time, a geographical line on which we could depend, drawn acroſs the continent of India, through the principal points between Agra and Poonah; and which, by eſtabliſhing ſo many intereſting poſitions, has enabled me to correct ſeveral routes, which, without it, would have remained very indeterminate. Narwah, for inſtance, corrects the bearing and diſtance of the road between it, and Agra;

* Page 20. † On an embaſſy to the Mahratta Court at Poonah.

Sirong,

Sirong, the road to Ougein and Mundu; and Burhanpour, the poſition of Aurungabad, and the bearing of the roads to Surat, Hydrabad, and Nagpour.

Mr. Smith reckons Poonah 1 degree 15 minutes to the eaſt of Bombay; and as we have already fixed the longitude of that place at 72° 40′ *, Poonah muſt be in 73° 55′. It muſt be obſerved that Mr. Smith places Bombay 5 minutes more to the eaſt than I do; Poonah therefore being in the ſame predicament, ſtands at 74° in his map. Its latitude is 18° 30′ †.

Burhanpour, according to Mr. Smith's map, is in longitude 76° 21′; or by its difference of longitude from Poonah 76° 16′. More will be ſaid on this ſubject, when we come to diſcuſs General Goddard's route. Sirong, Mr. Smith places in 78° 3′, which, with the allowance of the five minutes, will be 77° 58′. By ſome unaccountable miſtake, I have placed it in the map 4 minutes too far weſt.

General Goddard's celebrated ‡ march from Calpy on the banks of the Jumna, to Surat, has only been communicated in the form of an Itinerary, with the diſtances, as meaſured by a perambulator; but without bearings, or any other help to aſcertain the direction of it. Between Calpy and Chatterpour, two points fixed by ſurvey and latitude, there is no great difficulty in laying down the particulars. But much difficulty ariſes in aſſigning the poſition of any point between Chatterpour and Hurdah; the place where Goddard's route falls into Upton's (or Smith's) a ſpace of more than 250 B. miles. Huſnabad Gaut is about 60 B. miles, by the road, to the N. E. of Hurdah; and I have placed it, on a ſuppoſition that it is

* See page 25.

† Since the conſtruction of the map, I have ſeen a plan of Gen. Egerton's march towards Poonah, with a continuation of the road to that capital. The bearing of Poonah from Bombay, is there exactly the ſame as Mr. Smith reckons it: but the diſtance exceeds Mr. Smith's by about 3 G. miles. I apprehend that the diſtance was meaſured no farther than Tullowgom, which is about 14 G. miles (in horizontal diſtance) ſhort of Poonah.

‡ Although Col. Leſlie took the command during the early part of the march, yet he died before it was advanced much more than an eighth part of the way towards its place of deſtination.

not much out of the general line of the route; and all the intermediate places are proportioned to it.

From Burhanpour, where Goddard's route finally ſtrikes out of Upton's, to Surat, we are again as much in the dark, as to the bearings of the intermediate parts of the road; and the diſtance of one day's march is totally omitted in the Journal, or Itinerary. The whole diſtance, on ſumming up the particulars, is 223 B. miles; and if we allow 16 for the march omitted *, it will be 239. But it is noted at the bottom of the page, that "*the whole diſtance is* 245 *miles*"; ſo that there muſt be 6 miles ſunk in the detail. Therefore, taking the diſtance by the road at 245 B. miles, or 209 G. ones, and allowing only one mile in ten for the windings of the road, as it is, generally ſpeaking, a very ſtraight one, the horizontal diſtance between Burhanpour and Surat comes about 188 G. miles; which in that parallel is equal to 3 degrees 21 minutes of longitude.

Now the difference of longitude between theſe places by the aſſumed ſituation of Surat in my map, and that of Burhanpour in Mr. Smith's, is 3° 31′ †, or 10 minutes greater than by the above account. I have not ſeen any liſt of Mr. Smith's obſervations, and therefore do not know for certain, whether or not he took any at Burhanpour, or whether it is placed by deduction from ſome other obſervation. In this ſtate of uncertainty with reſpect to the exiſtence of any obſervation of longitude at Burhanpour, and relying on the poſitive information concerning the diſtance in the MS. journal; and alſo on the longitude of Surat as deduced from Bombay; and moreover, ſuppoſing it hardly poſſible that any road in that country can wind leſs than one mile in ten, I have placed Burhanpour in 76° 6′, or according to the difference of longitude given by the MS. Journal. Its latitude is about 21° 19′.

* This omiſſion occurs between Burhanpour and Saunkley; in which interval, Tavernier reckons 24 coſſes, and the Journal only 30 miles: ſo that we may ſuppoſe that at leaſt 16 miles are omitted.

† Surat, page 27 - - - - - - 72. 45
Burhanpour - - - - - - 76. 16
3. 31

It

It is remarkable that Tavernier reckons the ſame diſtance as the Journal, to within half a mile: for his 132 coſſes, at the rate of 42 to the degree, come out juſt 188 ½ G. miles *.

The road from Poonah to Nuſſergur (or Nuſſeratpour) and Soangur, was deſcribed by Meſſrs. Farmer and Stewart, during the time that they remained as hoſtages in the Mahratta camp; and the particulars were obligingly communicated to me by Mr. Farmer. This aſcertains the ſituations of Caſſerbarry and Coondabarry Gauts; and, in particular, that of the city of Amedabad, the capital of the ſoubah of the ſame name; and the laſt place of reſidence of the Emperor Aurengzebe. This city has been generally placed about 50 miles to the ſoutheaſt of its true poſition.

Tullowgom, Burgom (or Worgaum) and Condolah †, are from the ſame authority; as well as Naſſick-Trimuck, Zineer, and a variety of other uſeful particulars. Sattarah, the nominal capital of the Mahrattas, is placed according to the report of a native of that country; that is, 30 coſſes on the ſouth eaſt of Poonah.

The next line, in point of conſequence, is that from Maſulipatam to Aurungabad; deſcribed from the marches of M. Buſſy. The former of theſe places, according to Capt. Ritchie, is in lat. 16° 8′ 30″; longitude, inferred from Madras, 81° 15′ eaſt. M. Buſſy's march, as laid down in a map drawn by the late Mr. Montreſor, of the engineer corps at Madras, gives the bearing of Aurungabad from Maſulipatam, No. 55° 15′ W. diſtance 358 G. miles; placing the former in lat. 19° 33′, longitude 76° 6′, the difference of longitude between the two meridians, being 5° 9′.

* Since writing the above, I have been favoured with the peruſal of a map of Gen. Goddard's route. It was impoſſible to alter my map, ſo as to make it correſpond in all caſes, with Gen. Goddard's; but I have introduced ſuch alterations and corrections, as the nature of the caſe would admit of: and as the route ſtands at preſent, in my map, it is not materially different from the truth. The diſtance between Surat and Burhanpour, in Gen. Goddard's, is given at 202 G. miles of horizontal diſtance; or 3° 34′ difference of longitude (the bearing being nearly eaſt and weſt). This agrees ſo nearly with Mr. Smith's obſervation, that it gives room to ſuſpect the correctneſs of the MS. Journal, as it requires at leaſt 263, inſtead of 245 B. miles, to make up the horizontal diſtance abovementioned.

† Since corrected by the plan of Gen. Egerton's march.

Let us now examine what *data* we have to check this longitude of M. Buſſy's, from the ſide of Surat: for, from the nature of an Indian march, great part of which is made in the night, it muſt neceſſarily require correction; in the bearing at leaſt, and, moſt probably, in the diſtance. And we may accordingly infer from ſome diſtances of Col. Peach's, and of Major Stevens's, compared with ſome parts of M. Buſſy's marches, that this gentleman's diſtances are too ſmall; an error of a different ſide from what might be expected, in meaſuring diſtances haſtily with a perambulator *.

The poſition of Surat, is already accounted for in page 27; and Noopour is placed according to Gen. Goddard's meaſured diſtance from Surat; and the bearing accords with the ideas of Mr. Farmer, who paſſed near this place with Sindia's army. Tavernier reckons 105 coſſes between Noopour and Aurungabad, that is, 150 G. miles of horizontal diſtance, reckoning 42 coſſes to a degree. Now, Noopour, Aurungabad, and Maſulipatam, lie as nearly as can be, in a right line, whoſe extreme length is 516 G. miles. Tavernier's 150, added to Buſſy's 358, make up this diſtance to within 8 miles; or $\frac{1}{64}$ of the whole. Therefore, as it appears, in more than one place, that Buſſy's diſtances are too ſhort, I have made no ſcruple to add theſe 8 miles to his diſtance between Maſulipatam and Aurungabad; making it 366, inſtead of (the original) 358 miles.

With reſpect to the latitude of Aurungabad, I have corrected it by the computed diſtance between it and Burhanpour, which according to Golam Mohamed † is 66 coſſes; that is, 94 G. miles ‡, nearly on a meridian. This, deducted from 21° 19′, the latitude of Burhanpour, leaves that of Aurungabad 19° 45′, or 12′ more

* To ſhew that long diſtances *may* be accurately meaſured by a perambulator, I need only mention that during the Bengal ſurvey, I meaſured a meridian line of 3 degrees with a perambulator, and found it to agree minutely with the obſervations of latitude. However, due allowance was made for the irregularities of the ground, wherever they occurred.

† Golam Mohamed was a Sepoy officer ſent by Colonel Camac in 1774, to explore the roads and country of the Deccan, and to gain intelligence concerning the Mahratta powers.

‡ M. D'Anville reckons the ſame difference of latitude between the two places; but he has placed both of them too far north by 24 minutes.

north-

northwardly than what is given by M. Buſſy's march.—Theſe 12 minutes of latitude make an alteration of about a degree and a half in the angle of bearing: very little, conſidering circumſtances, in a march of 500 Britiſh miles. The alteration of the angle from N. 55° 15′ W. to N. 53° 45′ W. takes from the difference of longitude, as much as the 8 miles of diſtance on the Rhumb, add to it: ſo that the longitude ſtands as before at 76° 6′. I think there can be no reaſonable objection to this mode of ſettling it.

Congcoal is about 19 G. miles north $\frac{3}{4}$ weſt from Maſulipatam, according to the ſuppoſition of Major Stevens; and alſo by the information of two MS. maps which I have conſulted: and Ellore, by ſurvey, is 15 $\frac{1}{2}$ G. miles beyond it; that is, it bears N°. 7 $\frac{1}{2}$ W. diſtance 34 $\frac{1}{2}$ G. miles from Maſulipatam.

Col. Peach's march from Ellore to Warangole in 1767, furniſhed materials for fixing the ſituation of that place, and the road leading to it. A memorandum accompanying the ſurvey, ſays that its latitude is 17° 57′ *. Warangole is a fortreſs of vaſt extent, and is the Arinkil of Feriſhta, and the ancient capital of Tilling, or Tellingana.

Rajamundry is placed agreeable to Major Stevens's idea: for I do not find that ever it has been joined on by ſurvey to Maſulipatam, although it has to Ellore.

The mouths of the Godavery, and the courſe of that river as high as Toodiguntla; as well as the places between the Godavery and Col. Peach's march, are all taken from MSS. chiefly of Major Stevens's, lent me by Mr. Dalrymple.

The northern circars, Chilka Lake, and the road from that to Balaſore, are from various authorities. The conſtruction of the ſea coaſt has been already diſcuſſed †. Between Rajamundry and Viſagapatam, the particulars of the inland parts have been taken

* Notwithſtanding this aſſertion, the bearings and diſtance from Ellore place it in 18° 2′. And I much queſtion, whether Col. Peach's engineer had any good quadrant with him.

† See page 21.

chiefly from a large MS. map, in which Col. Ford's marches are deſcribed. Between Viſagapatam and Coopilly, is taken from another MS. map, ſeemingly not very accurate. Between Coopilly and Tickelly, is taken from Lieut. Cridland's very accurate ſurvey of the Tickelly diſtrict: and between Poonda and the Chilka Lake, from Mr. Cotsford's elegant map of the Itchapour diſtrict.

The Chilka Lake is partly from Mr. Cotsford, partly from Capt. W. Campbell; which latter alſo laid down the road from thence to Balaſore, through Cattack. Unfortunately his perambulator was ſpoiled between Cattack and Balaſore; which prevents my getting the ſituation of the former with reſpect to Bengal, otherwiſe than by the bearings and proportional diſtances between the two places.

The mouths of the Cattack river, or Mahanada, have never been traced, and are therefore deſcribed only from report. At the mouth of the principal channel, near Falſe Point, is a ſmall fortified iſland named Cajung.

From Cattack to Sumbulpour, is from Mr. Motte's obſervations in 1766. The diſtance is by computation, and the bearings taken by a compaſs, The latitude of Sumbulpour was alſo taken; but, I believe, not very accurately.

At Sonepour, or Jonepour, about 160 miles above Cattack, the rivers Tail and Mahanada unite. The former comes from the weſt, and is the largeſt river of the two, but its particular courſe is not known. I ſuppoſe it to be the ſame river, that in the weſtern parts of Berar is named the Worda. The Mahanada comes from the north; and, I believe, runs under Ruttunpour.

Rewan, or Rewa, in the Bundelcund country, is the moſt weſterly point on the road leading from Allahabad to Nagpour, and the Deccan, that is determined by ſurvey and latitude. From thence to Tetwarrah Gaut, on the Nerbudda, is laid down in a more curſory manner; but, I believe, tolerably exact for the purpoſes of a general

general map: and Gurry Mundlah, is placed according to the eſtimated bearing and diſtance from Tetwarra.

Nagpour, the modern * capital of Berar, and the reſidence of Moodagee Boonſlah, is ſaid to be 61 coſſes ſouthweſterly from Tetwarra. Golam Mohamed reckons 82 coſſes between Gurry Mundlah and Nagpour; which, conſidering the reſpective poſitions of the three places to each other, is 3 coſſes more than from Tetwarra. And again Golam Mohamed reckons 166 coſſes between Nagpour and Aurungabad; but he remarks on his approach to Aurungabad, that "the coſſes of this country are ſhort". Placing Nagpour 61 coſſes from Tetwarra, an interval of only 161 coſſes (of 42 to the degree) will be left between Nagpour and Aurungabad: which difference of 5 coſſes muſt be accounted for in the ſhortneſs of the meaſure remarked by Golam Mohamed.

Between Burwah in Bahar, and Nagpour, are reckoned 206 coſſes; that is 86 to Ruttunpour, and 120 from thence to Nagpour. But having placed the latter according to its reputed poſition with reſpect to Tetwarra and Gurry Mundlah, that is to ſay, in latitude 21° 50′, longitude 79° 36′, I can make no more than 198 coſſes between it and Burwah; or, 8 leſs than the computation. It may be that the road winds more than ordinary; or it may be rougher; which, in the idea of the Indian travellers, as well as of all others, lengthens the abſolute diſtance. Laſtly, it is only 77 coſſes from Huſnabad Gaut, as I have placed it †, altho' Gen. Goddard reckons it 100. The roads from Burwah to Ruttunpour, and from thence to Gurry Mundlah, Nagpour, Aurungabad, and Burhanpour; are all from the Itinerary of Golam Mohamed.

The country between Mirzapour and the head of the Soane, was explored by Capt Bruce, who ſo eminently diſtinguiſhed himſelf at the eſcalade of Gwalior in 1780. During his expedition, he

* Shawpour was the ancient capital.

† It happens that Huſnabad Gaut was placed in its true poſition, previous to my ſeeing the map of Gen. Goddard's march.

verified a fact which had been long doubted, though ſtrenuouſly inſiſted on by the natives; (viz.) that the Soane and Nerbudda rivers had their common ſource from a pond, or lake, on the ſouthern confines of the Allahabad province. Theſe rivers do literally flow from the ſame lake; making, conjointly with the Ganges, an iſland of the ſouthern part of Hindooſtan: and flowing in oppoſite directions 1500 miles. The courſe of the Nerbudda river is aſcertained, only in certain points where it happens to be croſſed by any of the great roads here deſcribed: excepting only in the neighbourhood of Broach. All the intermediate parts are drawn from report. It is repreſented to be as wide at Huſnabad Gaut, as the Jumna is at Calpy: but fordable in moſt places, during the dry ſeaſon.

The Soane is drawn in the ſame manner as the Nerbudda, in that part of its courſe above the boundary of the Bahar province: as are alſo the Tapty, Cane, Betwa, Chumbul, Sinda, and all the other rivers that flow within the bounds of the tract ſpoken of in this Section.

The road from Agra to Amedabad, has its particulars from D'Anville, who appears to have taken it from Tavernier's Itinerary. I have altered the ſcale of it, in order to make it correſpond with the difference of longitude (in my map) between Agra and Amedabad, which is about half a degree leſs than in M. D'Anville's: occaſioned by his having adopted the obſervation taken at Goa. Throughout this long line (450 B. miles) there is only one croſs diſtance to correct the bearing of it; and that is, Sir Thomas Roe's route from Burhanpour to Agimere. He reckons the diſtance 222 coſſes; of which 66 are between Burhanpour and Mundu; 105 between Mundu and Cheitore *; and the remaining 51 between Cheitore and Agimere.

All Tavernier's diſtances appear to be too great between Agra and Amedabad, according to the ſtandard of the coſs, in page 18;

* The ruins of this famous place are laid down at leaſt 80 miles to the ſouth of their true poſition in all the maps that I have ſeen.

owing

owing probably to the roughneſs and hillineſs of the road, which makes the horizontal diſtance leſs than in countries that are more ſmooth and open.

The upper part of the courſe of the Puddar is likewiſe from D'Anville: but this river certainly does not run into the head of the Gulf of Sinde, as deſcribed by him. I have not only the authority of a MS. map for this aſſertion, but alſo that of Capt. Joſeph Price, who had the misfortune to be carried up to the head of this gulf by Pirates (after a moſt gallant and obſtinate defence of two days). He aſſures me that nothing larger than a rivulet falls in there. I therefore conclude that the Puddar (or at leaſt a principal branch of it) falls in at Cutch: as a MS. chart deſcribes the mouth of a large river near it, by the name of *Mud River*; which name is characteriſtic of a river of the ſize, and length of courſe of the Puddar.

Capt. Price, who alſo travelled acroſs the Iſthmus between the Gulfs of Sinde and Cambay, eſtimates the width of the Iſthmus at 120 or 130 G. miles. The country is generally very flat, with a few ſmall eminences, fortified. The ſoil is dry, and unproductive of rice.

The inland part of the peninſula of Guzerat, is from M. D'Anville.

The poſition of the ancient and famous temple of Sumnaut *(Sunnam Sumnaut)* is collected from the Ayeneh Acbaree, and from Feriſhta. In the former, it is called *Puttan Sumnaut*, from its vicinity to the town of Puttan near Diu; which town is ſtill in being. And by Feriſhta it is ſaid to be "within the diſtricts of Deo, or Diu *". The latitude is given at 22° in the Ayeneh Acbaree; but it is nearer 21°.

The Broach diſtrict, and in general all the inland parts of Guzerat, from Surat to Amedabad, and from the ſea to Dubhoy; are

* Dowe, Vol. 1ſt. 66.

from

from ſurveys taken ſince the commencement of the Mahratta war. The tracing of the Nerbudda goes as far up as Bowapier Gaut, that is, about 80 Britiſh miles from the ſea.

The ſituation of Pawengur, is from Mr. Farmer. Thoſe of Narwalla, Champanier, Puttan, Nadout, &c. are either from the Ayeneh Acbaree, or from Feriſhta.

Mundu, and the road from thence to Burhanpour, is from Sir Thomas Roe, who places Mundu 66 coſſes from the latter, on the road to Agimere. Ougein, and the road from Mundu to Sirong, is from M. D'Anville; and Indoor from the information of Mr. Farmer.

The diviſions of Malwa and Guzerat, are from the Ayeneh Acbaree.

Hindia alſo is from the ſame authority. I take it to be the Andi of Tavernier. It is aſtoniſhing how he could ſo far miſtake the courſe of the Nerbudda river at that city, as to ſuppoſe that it fell into the Ganges.

The road from Burhanpour to Patris is from D'Anville; thoſe from Noopour to Aurungabad, from Tavernier: and thoſe from Aurungabad to Amednagur; from Bejapour towards Calberga; and from Nander to Enegil *; are from Mr. Jefferies's map, publiſhed in 1768. He, I underſtand, took them from ſome French MSS.

The road from Aurungabad towards Sanore-Bancapour, and from Hydrabad to Edghir, are from M. Buſſy's marches.

Sourapour, or Sollapour, Callian, Palkee, &c. are from a MS. lent me by Mr. Townſend.

Meritz and Panchmal are from the Eaſt India Company's records; as are alſo Deckenal and Khoud.

Chunderi, Rintimpour, Toumoun, are inferred from Feriſhta and the Ayeneh Acbaree. Gurry-Baundhoo, and a number of places in and about Bundelcund, are from a Hindoo map of that

* This I take to be part of the route of M. Buſſy towards Nagpour, mentioned by Mr. Orme, Vol. 1ſt 373. Should it be ſo, and the direction of the road in Jefferies's map be right; it corroborates the aſſumed ſituation of Nagpour in my map.

country,

country, the names in which, were obligingly tranſlated by Mr. Boughton Rouſe.

Bejapour, or Viſiapour, is not ſo well aſcertained as might be wiſhed. Mandeſloe, who travelled the roads himſelf, ſays, that it is 80 leagues from Dabul, on the coaſt of Malabar; and 84 from Goa; which, if meant of French leagues of 3000 paces, with an allowance of one in ſeven for windings, will give 142 G. miles from Dabul, and 149 from Goa: making Bejapour in lat. 17° 36′; lon. 75° 44′. P. du Val, who formed a map of Mandeſloe's routes, (Vide Britiſh Muſeum) and probably had lights, beſides what are furniſhed by the travels, to guide him, makes the diſtance between Dabul and Bejapour, greater than between Bejapour and Goa. And this I think likely to be the caſe, though contrary to what is ſaid in the travels.

Tavernier reckons 85 coſſes from Goa to Bejapour (or rather perhaps from Bicholim, the landing place on the continent) or 8 days journey: and ſays that from Bejapour to Golconda, the diſtance is 100 coſſes more. This account muſt be exceedingly vague; becauſe Goa and Golconda are more than 200 coſſes aſunder, by the directeſt route; and Bejapour lies more than 40 coſſes out of the line.

The *Lettres Edificantes* make the latitude of Bejapour 17° 30′. I have endeavoured to take the medium of theſe diſcordant accounts, and have placed it in latitude 17° 21′, lon. 75° 52′; that is, 94 coſſes from the coaſt oppoſite to Goa; 111 from Dabul; and 122 from Golconda. At the ſame time, I think it probable, that it may not be within 20 miles of its true poſition. The particulars of the roads leading to it from Dabul and Goa, are from P. du Val's map.

Raölconda, afamous diamond mine, is placed in Mr. Montreſor's map, about 15 G. miles to the weſt of Ralicotte, and 12 from the north bank of the Kiſtna; but I know not on what authority. Tavernier, who viſited both Raölconda and Coloor, gives the diſ-

tance of the firſt from Golconda 17 *Gos*, of 4 French leagues each; and of the latter 13 ¾. Now, the diſtance of Coloor from Golconda, is tolerably well known to be 84 G. miles: ſo that a Gos, by this account, muſt be about 6 ½ G. miles in horizontal diſtance (or nearer 3, than 4, French leagues) and 17 of them muſt be equal to 110 ½ G. miles; and this will place Raölconda about 7 G. miles on the eaſt of Ralicotte. And I think it more probable to be on the eaſt, than on the weſt of it; for Tavernier mentions the croſſing a river, which formed the common boundary between Golconda and Viſiapour (or Bejapour) about 4 Gos or more before he came to Raölconda. This river, which can be no other than the Beemah, runs about 6 ½ Gos on the eaſt of Ralicotte, and forms, to this day, the boundary of Bejapour: and Raölconda, by this account, muſt be between the Beemah river and Ralicotte; that is, on the eaſt of the latter.

If we take the *Gos* at 4 French leagues, without regarding the proportion ariſing from the calculation on the Coloor road, it will bring Raölconda very near the ſituation aſſigned it by Montreſor. But I have nevertheleſs adopted the former, thinking it, on the whole, the moſt conſiſtent.

The modern Univerſal Hiſtory, vol. 6, ſays that the mines (Raölconda) are ſix days journey from Biſnagur: but this will apply equally to either of the above poſitions.

Again, Tavernier ſays in another place, that Raölconda is five days journey from Golconda; and eight or nine from Bejapour. This account muſt be very erroneous; for Raölconda is at leaſt nearer to Bejapour than to Golconda.

The Godavery river, or Gonga-Godowry, commonly called Ganga in European maps, and ſometimes Gang in Indian hiſtories; has generally been repreſented as the ſame river with that of Cattack.

As we have no authority, that I can find, for ſuppoſing it, the opinion muſt have been taken up, on a ſuppoſition that there was no

no opening between the mouths of the Kiſtna and Mahanada (or Cattack river) of magnitude ſufficient for ſuch a river as the Ganga. It could not be for the want of ſpace ſufficient for the Cattack river to accumulate in, independent of the Ganga; for the diſtance is as great from the mouth of the Cattack river to the Berar mountains; as from the mouth of the Godavery to the Baglana mountains. The truth is, that no juſt account of theſe rivers, any more than of the Burrampooter, had then reached any European geographer. The Ayeneh Acbaree, ſpeaking of the Godavery, ſays, "it runs intoBerar from Amednagur; and continues its courſe into Tellingana". Here is a declaration that the Godavery is the river that runs thro' Amednagur: And that the Amednagur river (let its name be what it will) runs from Berar into Tellingana; that is, the country of which Warangole (or Arinkil) was the capital. Its ſource is within 70 miles of Bombay. Mr. Farmer croſſed it near Poonah, where it is named Gonga-Godowry; and is eſteemed a ſacred river.

After all, a branch of the Godavery may poſſibly communicate with the Mahanada, during the rainy ſeaſon; but there is certainly no authority for ſuppoſing it. The Chilka Lake, which was once thought to be an inland lake of freſh water, and had a communication with both rivers, is now known to be a ſalt lake contiguous to the ſea, near Ganjam.

The general courſe of the Kiſtna river, as high up as Gutigui, or Catigui, in the road from Aurungabad to Sanore, is from the map of M. Buſſy's marches. Above Gutigui, it is marked in two places, by the interſections of the roads from Bejapour to Goa, and Dabul. Its ſource is not more than 42 miles from the Malabar coaſt near Dabul. General Joſeph Smith remarks, that the Kiſtna was fordable both above and below the conflux of the Beemah river, in the month of March: and that a few miles below the mouth of the Beemah, its bed was 600 yards wide,

and exhibited an uncommon appearance from the number and diverſity of the rocks in it.

The Beemah river is known to be a principal branch of the Kiſtna, coming from the north, and joining it near Edghir. It riſes in the mountains on the north of Poonah, probably not many miles from the head of the Godavery, and paſſes within 30 miles of the eaſt ſide of Poonah, where it is named *Bewrah*, as well as Beemah, and is alſo eſteemed a ſacred river. General Joſeph Smith croſſed this river, when accompanying the Nizam in 1766, about 10 miles above its junction with the Kiſtna, where it was fordable.

The Mandouah, or Bejapour river, is a branch of the Beemah.

There yet remains in the map, a void ſpace between the known parts of Berar, Golconda, Oriſſa, and the northern circars, of near 300 Britiſh miles in length, and 250 in breadth; nor is it likely ever to be filled up, unleſs a very great change takes place in the ſtate of European politics in India. Our poſſeſſions in the northern circars, extend no where more than 70 Britiſh miles in land, and in ſome places not more than 30: ſo that they form a ſlip of more than 350 miles in length; bounded in general towards the continent, by a high ridge of mountains, which runs nearly parallel to the ſea coaſt, the exterior boundary.

Within theſe mountains, and towards Berar, is a very extenſive tract of woody and mountainous country, with which the adjacent countries appear to have but little, if any, communication. We may fairly ſuppoſe that to be a country void of the goods in general eſteem amongſt mankind, that does not tempt either their avarice, or ambition. Although ſurrounded by people who are in a high degree of civilization, and who abound in uſeful manufactures, we are told that the few ſpecimens of theſe miſerable people who have appeared in the circars, uſe no covering but a wiſp of ſtraw. We know not, with any degree of certainty, how far this wild country extends within the outer ridge of mountains,

tains between the parallels of 17° and 20°: but the firſt civilized people that we hear of beyond them, are the Berar Mahrattas. I think it probable that it extends 150 miles, or more. However, a party of Berar Mahrattas found their way through this country, and the Bobilee Hills in 1754 *, at an opening called Salloregaut, in the Cicacole circar.

* Orme, Vol. 1ſt. 373.

SECT.

SECTION V.

The Countries contained in that Part of the Peninſula, lying South of the KISTNA, *or* KHRISHNA *River.*

THIS tract, which in extent is not a ſeventh part larger than the Bengal provinces, has, by its political diviſions, and by the talents and ambition of its Princes, of late years, furniſhed more matter for ſpeculation and hiſtory, than, perhaps, all the reſt of the empire put together. But although it has been the theatre of repeated wars between the European powers and the natives, ſo ample a ſupply of geographical matter has not been furniſhed, as by the wars and negociations in the north. The geography of ſome of the weſtern parts of this peninſula, are as little known to us, as that of the central parts of Hindooſtan.

The figure of this tract is a triangle, of which the courſe of the Kiſtna river forms the baſe, and the coaſts of Malabar and Coromandel the ſides. Its extent from the Kiſtna to Cape Comorin, which forms the apex of the triangle, is about 600 Britiſh miles; and its breadth in the wideſt part, that is, from Maſulipatam to Gheriah, about 500.

The conſtruction of the ſea coaſts, has been deſcribed in the firſt ſection, and that of the courſe of the Kiſtna river in page 75.

I underſtand that the country from Madras to Ooſcotta weſtward; and from about Pondicherry and Tingrecota ſouthward, to Chandeghere northward; or, in other words, between the parallels of 12 and 14 degrees of latitude, is deſcribed from meaſured routes in Mr. Montreſor's MS. map at the Eaſt India Houſe; and in the printed map inſerted in the ſecond volume of Mr. Orme's elegant and

and uſeful Hiſtory of the Military Tranſactions of the Britiſh Nation in Hindooſtan. And as Mr. Orme, in particular, has had acceſs to all, or moſt of the ſurveys of the marches of the Britiſh armies, on the ſide of Myſore and the Carnatic, I ſhall take his map for a ground work, after examining his ſcale of diſtances.

I find Mr. Orme's map gives the diſtance between Madras and Ooſcotta, the moſt weſtern point of the ſurvey, 168 G. miles; and Mr. Montreſor's, 165. It is impoſſible for me to determine which of the two is right; but as Mr. Montreſor conſtructed his map on the ſpot, and was conſequently in the way to be beſt informed with reſpect to the choice of materials, I am inclined to give the preference to his ſcale. But as perſons, who have not had opportunities of comparing Perambulator diſtances with thoſe given by obſervations of latitude, are apt to make too little allowance for the unevenneſs of ground, in hilly countries, I have taken one mile from Mr. Montreſor's diſtance, to allow for ſuppoſed errors of this kind: and then have placed Ooſcotta 164 G. miles, nearly weſt from Madras.

Bangalore, according to Montreſor, is 12 G. miles, weſt, a little ſouthwardly, from Ooſcotta; which, added to 164, makes 176 G. miles between Madras and Bangalore. This, by Mr. Orme's account, would be 180: and by a French map publiſhed in 1770, 181. D'Anville makes it 177.

After thus eſtabliſhing a ſcale for the difference of longitude, I have copied all that part of Mr. Orme's map, between the parallels of Pondicherry and Chandeghere; and between the meridians of Madras and Ooſcotta.

Between Pondicherry and Madura, the maps of Mr. Orme and of Mr. Montreſor, are both exeeding faulty, for want of a good line of bearing, between the two places. This I have been able, fortunately, to ſupply; and the detail of the operation of finding the difference of longitude between them, has been given in page 23; where 1° 30′ 30″ is found to be the true difference, though

23 mi-

23 minutes leſs than Mr. Orme has made it. Accordingly, the bearing of the road between Gingee, Tritchinopoly, and Madura, is in my map 4° more ſouthwardly than in Mr. Orme's: and, of courſe, Caroor, and all other places, whoſe poſitions had a relative dependence on that of Tritchinopoly, are removed proportionably farther to the eaſt.

The Tanjore country is taken entirely from Mr. Orme's map; and the upper part of the courſe of the Caveri, from Mr. Montreſor's. The Madura and Tinevelly countries are from Mr. Orme; who deſcribed them according to ſurveys taken under the direction of Colonel Call.

Shevagunga, Dindigul, Pinee, and ſeveral other places in the neighbourhoods of Madura and Tritchinopoly, are from MSS.

Travancore, is partly from MS. maps, and partly from M. D'Anville. The lakes between Quilon and Cochin are from a Dutch MS. map, which bears the appearance of authenticity.

Carroor, in Mr. Orme's hiſtory (Vol. II, p. 674) is ſaid to be 50 Britiſh miles, or 43 G. miles, from Tritchinopoly; and 5 ſouth of the Caveri river: and Montreſor gives its bearing from Tritchinopoly about W. b. N. I have placed it accordingly. On this point, in a great meaſure, depend the poſitions of all the places between the Carnatic, Coïmbetour, and Seringapatam.

Coïmbetour, in Mr. Montreſor's map, is placed 78 G. miles from Caroor, on a continuation of the ſame bearing line from Tritchinopoly; and is, I ſuppoſe, taken from the journal of Major Wood in 1767. But this poſition would bring it within 34 G. miles of Tannore on the Malabar coaſt; which, I believe, can hardly be the caſe. I have placed it 66 G. miles from Caroor, and 47 from Tannore.

Seringapatam, or *Shringaputton*, Hyder Ally's capital, is 66 G. miles in a W. S. W. direction from Bangalore, according to Montreſor; and 20 leagues, according to a note in the French map of 1770; which, reduced to horizontal diſtance, is about 52 G. miles.

I have allowed 54: which places it 85 G. miles from the port of Mangalore, on the coaſt of Malabar. D'Anville reckons it 91.

All the places between Seringapatam, Coïmbetour, Carroor, and Ooſcotta, are placed according to their proportional diſtances from ſome of theſe four places, in the map of Mr. Montreſor. It may be neceſſary to repeat in this place, that the obſervations of longitude taken at Bombay and Cochin (See page 27) by throwing the Malabar coaſt ſo much farther to the eaſt, whilſt that of Coromandel remains where it was, reduces very conſiderably the ſpace that we have hitherto ſuppoſed to exiſt, between the weſtern mountains of the Carnatic, and the Malabar coaſt.

Sirripy * is according to D'Anville.

Bednore, or Hyder-Nuggur, according to the report of Mr. W. Townſend, who travelled from Onore to Bednore and Siringapatam, is about four ordinary days journey to the northeaſtward of Onore. Goods are ſometimes brought down in 5 days. Fryer alſo reckons it four days journey; and this may be ſtated at about 46 coſſes. This poſition agrees with Mr. Montreſor's map, in which it is placed 141 G. miles to the northweſt of Bangalore.

Mr. Townſend, according to his way of travelling, was 7 days between Onore and Bednore; and 11 from Bednore to Seringapatam: by which he could not travel much more than 8 coſſes per day, between the two latter places. He repreſents the country of Bednore as being open and fruitful: nor did he meet with any mountains after he paſſed the Gauts in the former part of his journey.

Chitteldroog, Harponelly, Bilghey, Bincapour, and Roydroog, are all from Mr. Townſend's memorandums.

Sanore-Bancapour is from the map of Mr. Buſſy's march from Aurungabad. Biſnagur, or Bijinagur, is from Mr. Orme; who ſays it is 30 miles ſoutheaſt from Sanore.

* I apprehend Sirripy to be ſynonymous to Sera.

The road from Goa to Galgala, is from a MS. Itinerary lent me by Mr. Dalrymple. I apprehend it was kept by Gemelli, when he viſited Aurengzebe's camp at Galgala, in the laſt century.

The direction of that part of the range of mountains called the Gauts, between Cape Comorin and Calicut, is from Orme and Montreſor; and the reſt from D'Anville. I have alſo copied from D'Anville the upper part of the courſe of the Tongebadra river, and alſo that of the Roydroog, or Hindenny river; together with the poſitions of ſeveral places, on or near it.

In Jefferies's map, publiſhed in 1768, we find, on the ſouth of the Kiſtna, a route from Bancapour to Adoni, and Seringapatam; and another from Cuddapah to Canoul. I am informed that he took them from ſome French MSS: and, in conſequence, I made ſome enquiry after them, though to no purpoſe. They would prove very uſeful at this time, when we have ſo much hiſtory that requires ſuch kind of illuſtration.

I have copied the courſe of the river Pennar, from Nellore to the neighbourhood of Bangalore, from Mr. Montreſor, who had it, I apprehend, from the commander of a detachment, who marched that way in 1767. This ſerves to fix the poſitions of Cuddapah, Gandicotta, Gutti (or Gooty) &c: and the poſitions of the intermediate places, between the Pennar river, and the tract copied from Mr. Orme, are placed according to their proportional diſtances from Cuddapah, Gandicotta, Gutti, Chandeghere, Dalmacherry, and Bangalore; as found in Mr. Montreſor's map. Udegherri is corrected by a march of Gen. Caillaud's.

The particulars of the Ongole country are taken chiefly from Montreſor; as well as the poſitions of Currumpoody, and Timerycotta. I have ſome doubts concerning the truth of the latter: for I think it likely to be too far to the weſt. However, Condavir, the principal fort in the Guntoor circar, is ſaid by Captain Davis to be about 32 coſſes to the eaſt of Timerycotta; and the fort of Ratch-

Ratchore *, 24 coſſes to the eaſt of Condavir: by which Timerycotta muſt be at leaſt 56 coſſes from the ſide of the Kiſtna river oppoſite to Maſulipatam. How far Ratchour may be from that part of the Kiſtna, I have no means of knowing: but by my map, it ought to be 12 coſſes; as there is an interval of 68 coſſes between the Kiſtna and Timerycotta.

Condavir is alſo ſaid by Capt. Davis to be 10 coſſes from the ſouth bank of the Kiſtna. I ſhould ſuppoſe it to be much more: a *Malabar* map makes it 20.

I have not found it an eaſy taſk to fix the poſitions of either Adoni, Canoul, Innaconda, or Combam; any more than thoſe of Condanore and Rachore †. On the four firſt places, many others depend; and they are neither of them aſcertained to my ſatisfaction. There is in particular, a degree of obſcurity in the accounts of Canoul, that I cannot clear up. My local information, fails me entirely in this place; and this kind of knowledge is ſo requiſite to a geographer, that no degree of ſtudy or inveſtigation can compenſate for the want of it. It not only enables him to reconcile names and ſituations; but oftentimes furniſhes him with a criterion by which he may diſtinguiſh the value of his materials.

In a map drawn by a native of the Carnatic, Innaconda ‡ is placed 28 coſſes from Ongole, and a little to the weſt of the road leading from it to Timerycotta: which laſt place, is in the ſame map reckoned 49 coſſes from Ongole. Two Engliſh MS. maps lent me by my friend General Caillaud, place Innaconda ſomewhat more than half way from Ongole to Timerycotta, and nearly in the ſame line of direction; that is, about N. W. b N. This I have followed; and have alſo allowed the diſtance of 28 coſſes: and this poſition brings it about 30 coſſes from Mootapilly.

* This muſt not be confounded with the town and fort of nearly the ſame name, near Adoni.

† Adjoining to the territory of Adoni.

‡ Called alſo Innagonda and Viniconda: and by M. D'Anville, Huiniconda.

Chantapilly, or Chenlapilly, Mongelgary, Pullareddygur, Maſherlaw, and Syampilly, are all taken from the *Malabar* map; or that drawn by the native of the Carnatic.

Combam, or Comum, on the frontier of Cuddapah, is by the Malabar map 32 coſſes weſt from Ongole: and, in the route ſent by Col. Harper to the Madras government *, 25 from Innaconda: both of which accounts are conſiſtent. This is the place called *Kaman* by Tavernier; and is ſaid by him to be the frontier of the Carnatic towards Golconda, in the year 1652.

From Combam to Adoni by the ſame route of Col. Harper's, there are reckoned 67 coſſes; and, by the Malabar map, 66: ſo that there can be little doubt of this being the diſtance by general eſtimation. Montreſor places Adoni about 50 G. miles about E. b N. from Biſnagur: and reckoning the 67 coſſes at 96 G. miles, the ſum will be 146 between Biſnagar and Combam. This interval, on the map is, however, 159, or 13 more than the computed diſtance. Theſe 13 miles, I have divided proportionally between the two intervals; and by this means Adoni will be on the map, 73 coſſes, inſtead of 67, from Combam. And it being two days journey, or about 23 coſſes to the northweſt of Gutti, we cannot be wide of the mark reſpecting its parallel. It muſt be obſerved, that the Malabar map reckons only 60 coſſes between Arcot and Cuddapah; which, on my map is 68, of thoſe that are reckoned 42 to the degree. It may be that the coſs of that country is longer than ordinary; and this may account for the difference between Adoni and Combam.

Condanore is 15 coſſes to the eaſt of Adoni, by the route tranſmitted by Col. Harper.

Canoul, in the Malabar map, is ſaid to be 52 coſſes from Hydrabad; and only 57 from Cuddapah. This appears to be impoſſible,

* The route in queſtion was not *marched* by Col. Harper, but collected from the information of his guides, whilſt at Innaconda. It appears on the records of the Eaſt India Houſe,

as

as the diſtance between Cuddapah and Hydrabad, cannot be leſs than 120 coſſes; and theſe two ſums make only 109. It may be that the diſtance between Cirvalla and Nandy-Allem, is 15 coſſes, inſtead of the 5 written in the map; as the other ſtages are from 16 to 20. The map alluded to, is not conſtructed by a ſcale, but rudely ſketched out without much proportion being obſerved either in the bearings, or diſtances of places from each other: and the diſtances are written in figures between the ſtages. I have before expreſſed my doubts concerning the truth of the local poſition of Canoul, in my map.

Rachore * is four days journey from Adoni, and five from Calberga; according to the report of an European who travelled it. This perſon came from Seringapatam, by way of Gutti to Adoni; and communicated this, and ſeveral other particulars in his Itinerary, to Mr. W. Townſend; who obligingly gave them to me. A day's journey for a ſingle perſon may be reckoned from 11 to 12 coſſes (or about 22 Britiſh miles in *road diſtance* †) and this proportion agrees with the account of his journey from Seringapatam to Gutti; which, being about 105 coſſes, took him up 9 days.

Rachore, according to Montreſor, is not far from the ſouth bank of the Kiſtna; and lies below the conflux of the Beemah river, and above that of the Tongebadra; and this poſition agrees with the account of its being four days journey from Adoni, and five from Calberga.

The poſitions of Combam and Maſherlaw obtained by means of the Malabar map; and that of Deopad ‡, or Doupar, from Col. Harper's march, help me to trace out Tavernier's route from Gandicotta to the Kiſtna, and Hydrabad; as alſo the poſition of the Pagoda of Tripanty.

Sankalamary ſeems to be the Santaſeela of Tavernier; and Combam is, no doubt, his Kaman. Deopad is what he calls Doupar;

* Called alſo Raw-chure, Rach-hore, and Adoni-Rachore.
† Uſed in contradiſtinction to *horizontal diſtance*.
‡ This place is 14 coſſes from Innaconda to the W. S. W.

ſituated,

ſituated, according to his account, in a country interſected by many torrents from the neighbouring hills: Col. Harper makes the ſame remark on Deopad. Tripanty * Pagoda was about 12 miles on the north of Doupar. Maſherlaw, near Timerycotta, is probably the Macheli of Tavernier, by its ſituation in reſpect to the Kiſtna.

I have not been able to procure any map of the road from Nellore to Hydrabad, except the one in D'Anville's Coromandel, publiſhed in 1753: nor any Itinerary whatſoever. I have had ſome opportunities of correcting it, in the part between Nellore and the Kiſtna: but the reſt remains as I found it, except in the article of bearing; in which M. D'Anville and I differ very conſiderably. Tavernier's route from Gandicotta, falls into it, near the ſouth bank of the Kiſtna.

* Some have confounded this with *Tripetty*, a more celebrated Pagoda in the vicinity of Chandeghere; and 160 miles farther to the ſouthward.

SECT.

SECTION VI.

The Countries between HINDOOSTAN *and* CHINA.

IT has been ſaid before (page 36) that the firſt ridge of mountains towards Thibet and Bootan, form the limits of the ſurvey to the north: to which I may now add, that the ſurveys extend no farther eaſtward, than to the frontiers of Aſſam and Meckley.

The Jeſuits' map of China, as given in Du Halde, places the weſtern boundary of Yunan (the weſtmoſt of the provinces of China) between the 97th and 98th degrees of eaſt longitude, in the parallel of 24°: ſo that the eaſtern frontier of Bengal (Silhet) is within 350 Britiſh miles of the weſtern part of China; or to ſpeak comparatively, the ſame diſtance as Silhet is from Calcutta. Here one is apt to wonder, that conſidering their vicinity to each other, there ſhould be no communication between the two countries. The reaſons probably are, that Yunan does not produce ſuch manufactures as are in requeſt amongſt foreigners; and that the courſes of the great navigable rivers in thoſe parts, are unfavourable to a communication by water. The ſpace between Bengal and China, is occupied by the province of Meckley, and other diſtricts, ſubject to the King of Burmah, or Ava.

The great river *Nou Kian*, little, if at all, inferior to the Ganges, runs to the ſouth, through that angle of Yunan which approaches neareſt to Bengal; where the Jeſuits, who formed the map of China, left it, in its courſe to the ſouthweſt. This river, M. D'Anville conceived to be the ſame with that of Pegu, in like manner as he ſuppoſed the Sanpoo to be the Ava river: but ſucceeding accounts

counts have left little doubt remaining, that the Sanpoo is the Burrumpooter; and the Nou Kian, the river of Ava.

In my account of the construction of the sea coasts (page 30) my authorities for describing the *delta* of the Ava river from the sea to the parallel of 18°, are given. The Dutch MS. map there quoted, describes the whole course of the river, as high up as the city of Ava itself, which it places in latitude 21° 48′; and also says in a note "*by observation:*" and indeed, the whole scale of the map seems to be formed from the difference of latitude.

The difference of longitude, as inferred from this Dutch map, places Ava in 97°. But Capt George Baker, of whose accuracy I entertain a high opinion, took the bearings, and estimated the distances, the whole way from Negrais to Ava: and the result corrected by the observation at Ava (21° 48′) gives the longitude 97° 42′: and this longitude I have adopted. The particulars of the course of the river, I have taken from the Dutch map; as Captain Baker describes only the general direction of it.

Monchabco, a city, and the residence of the King of Burmah, or Ava, in 1755, is by Capt. Baker's account, 38 ½ G. miles north from Ava: and this was the extreme point of his travels that way.

The Nou Kian is named Irabattey by the people of Ava; and is said by them to be navigable from the city of Ava into Yunan. Monchaboo being within 130 B. miles of the Chinese frontier, we want only so much, to compleat the course of the river in the map. This break is there described by dotted lines.

Mr. Verelst, who meditated an expedition into Meckley from Bengal, and actually advanced as far as Cospour on his way to it, in 1763; was informed by his Meckley guides, that after he should pass the first ridge of mountains beyond Cachar, he would find a fertile and well inhabited country all the way to Ava. He, however, went no farther than Cospour; but the particulars of the road between that place and Ava, are described from the intelligence furnished by the guides who attended him.

Capt.

Capt. Baker deſcribes the country bordering on the Ava river, from the ſea to Lundſey, as being very flat, and the ſoil rich; and, I ſuppoſe, like that at the lower parts of the courſes of the Ganges, Indus, and other capital rivers, formed out of the mud depoſited by the inundations of the river. This low tract is named Pegu, and formed an independent kingdom in 1754, when it was reduced by the King of Burmah, to the ſtate of a dependent province.

Burmah borders on Pegu to the north, and occupies both banks of the river as far as the frontiers of China. On the northweſt is Meckley, which we have before taken notice of: and on the weſt Aracan (or Reccan) and Roſhaan. On the eaſt, it has the kingdom or country of Upper Siam; which, Capt. Baker informs us, begins at a ſmall diſtance eaſtward from the city of Ava; a ridge of mountains ſeparating it from Burmah and Pegu.

The King of Burmah, whoſe capital is Ava *, and from whence the whole kingdom, tho' erroneouſly, is often denominated, is ſaid to poſſeſs not only the country of Meckley, in addition to thoſe of Pegu and Burmah; but alſo the whole tract which lies on the north of it, between China, Thibet, and Aſſam. Du Halde's map ſpeaks poſitively, as to this point, but with what truth I know not, as I have never been able to gain any information on the ſubject.

Capt. Baker informs us, that the country of Burmah, adjacent to the banks of the Irabatty, or Ava river, between Pegu and Monchaboo, is in ſome places hilly, and in other flat; but not ſo low as to ſuffer inundations. Its produce is, in moſt reſpects, nearly the ſame as that of the countries contiguous to the Ganges; and, it is remarkable, that the lands which produce the greateſt quantity of Saltpetre, are much about the ſame diſtance from the ſea, as thoſe of the ſame nature on the ſide of the Ganges.

The country of Burmah produces the beſt Teek † Timber in

* Although Ava is reckoned the capital, yet we find that Monchaboo was the reſidence of the King in 1755.

† This wood, which may not improperly be ſtyled *Indian Oak*, is for the purpoſes of ſhip-building in warm climates, of much longer duration than the European Oak. Teek ſhips of

India. The foreſts which produce this moſt uſeful and valuable article, are ſituated between the weſtern bank of the Ava river, and the country of Aracan; and are only 250 miles from the ſea, by the courſe of the river.

The Sanpoo, or Thibet river, was ſuppoſed by M. D'Anville to be the ſame with that which is called, in the lower part of its courſe, the river of Ava: but we have now little doubt of its being the ſame with the Burrampooter, which enters Bengal on the northeaſt, and joins the Ganges near the ſea. It was traced by me in 1765, to about 400 miles above the conflux; that is, as high as the latitude of 26°, longitude 91°; where the Bengal diſtricts end, and thoſe of Aſſam begin: but I was not permitted to go any higher. However, ſome few Europeans, engaged in the Goalparah trade, and amongſt others, M. Chevalier, the late Governor of Chandernagore, by permiſſion of the King, went as high up as the capital of Aſſam, about the year 1762: but was under a conſiderable degree of reſtraint, with reſpect to making remarks, either on the courſe of the river, or on the country. As M. Chevalier, however, went on a very large embarkation, we are convinced that the river is navigable for large boats, through a ſpace about equal to the diſtance of Buxar from the ſea; that is, between 600 and 700 miles. It may probably be navigable much higher up; though its navigable courſe cannot be equal to that of the Ganges; this flowing chiefly through a level country, and the Burrampooter through a mountainous one.

I have placed the capital of Aſſam, Ghergong *, 160 G. miles nearly E. b N. from Goalparah, according to the report of the Aſſamers. They alſo informed me, that the Burrampooter has a very long courſe previous to its entering Aſſam; and that it comes from the N. W. thro' the Thibet mountains. Now the Lama's

40 years old and upwards, are no uncommon objects in the Indian ſeas; whilſt a European built ſhip is generally ruined before ſhe has continued there five years.

* Called ſometimes Kirganu.

map

map of Thibet in Du Halde, deſcribes the courſe of the Sanpoo, to within 120 G. miles of the aſſumed ſituation of the capital of Aſſam: and ſtill nearer to ſome parts of the Burrampooter that are known, and have been deſcribed by the Aſſamers.

Theſe facts, together with thoſe reſpecting the Ava river and Nou Kian, eſtabliſh (I think) the ſtrongeſt preſumptive proof poſſible of the Sanpoo and Burrampooter being one and the ſame river, under different names *: and poſitive proof can never be obtained, but by actually tracing them; a circumſtance unlikely ever to happen to any Europeans, or their dependants.

Some difficulty ariſes in fixing the poſition of Laſſa, the capital of Great Thibet. We have the hiſtory of the Lamas' map in Du Halde, which is not altogether favourable to its character; eſpecially in the parts towards the ſource of the Sanpoo and Ganges. A cloſe examination of its particulars, turns out ſtill more unfavourable to it. For inſtance, the place where the Ganges enters the plains of Hindooſtan, is placed under the 28th degree of latitude; tho' it is known by our late obſervations, to be in about 30°. With reſpect to the longitude, we have no grounds, on which to form an exact compariſon; but we may conclude generally that the diſtance between Laſſa and Hurdwar is near 2 degrees of longitude leſs than it ought to be: I mean, provided that Laſſa be near its true poſition with reſpect to Pekin, in the Lama's map †.

With reſpect to Hurdwar, the proof is poſitive of its being 2 degrees farther to the ſouth than it ought to be; and this furniſhes a ſtrong preſumptive one, that all the weſtern parts of the map, are faulty in the ſame proportion: and that the ſources of the Ganges and Sanpoo, inſtead of being between the 29th and 30th degrees of latitude; are, in fact, between the 31ſt and 32d. Nor am I ſingular in this opinion: for M. D'Anville found it neceſſary

* The interval between the known part of the Sanpoo and that of the Burrampooter, is deſcribed by dotted lines.

† Laſſa, in the Lamas' map is about 24° 17′ weſt from Pekin, or 91° 40′ eaſt from Greenwich.

to make the very alterations both in latitude and longitude, which I have been ſuggeſting. And I ſhould be wanting in candour, and in reſpect to his memory, ſhould I forbear to do juſtice to his nice diſcernment in placing the entry of the Ganges into Hindooſtan, by inference from Delhi, almoſt in the very ſpot where I have now placed it, by actual ſurvey.

But M. D'Anville, ignorant of the reſpective poſitions of Bengal and Laſſa, adopted the latitude of the latter place, given in the Lamas' chart: that is to ſay, about 29° 35′. Father Giorgi, who travelled to Laſſa from Bengal (and whoſe route is expreſſed in my map) ſays the latitude * of Laſſa is "about 30 degrees and a half;" and by what follows, it can hardly be in a lower parallel.

The late Mr. George Bogle, who was ſent by the Governor of Bengal on an embaſſy to the Grand Lama of Thibet in 1774, travelled by way of Coos-Beyhar, Taſſaſudon, and Paridrong, to Chanmanning, the then reſidence of the Lama, and nearly in the ſame parallel of latitude with Laſſa. Unfortunately, very little geographical information was furniſhed by this journey; unleſs the bare account of the number of days he was on the road between the two laſt places, may be deemed ſuch. However, this information, ſuch as it is, joined with other circumſtances, helps to aſſure us that Laſſa is farther to the north, than the Lama's map repreſents it: for Taſſaſudon, the capital of Bootan †, is by the accounts of the Bootanners, about 46 G. miles horizontal diſtance from Luckiduar, in a direction nearly north; and Luckiduar being in 26° 56′, Taſſaſudon cannot be in leſs than 27° 43′. Paridrong ‡, is a conſiderable way beyond that, and may be ſuppoſed to be in 28 degrees at leaſt: but the Lamas' map places it in 27°; making an error of a whole degree of latitude. This place and the chain

* Vide Alphabetum Thibetanum.

† Thibet and Bootan are often confounded together. The latter is properly a feudatory, or dependency of the former, and borders on Bengal.

‡ Called Paridſong in the Lamas' map.

of

of mountains near it, have been regarded as the common boundary between Thibet and Bengal: but Mr. Bogle has cleared up this matter, by aſſuring us that Paridrong is the frontier town of Thibet towards Bootan, and not towards Bengal. And we have before aſcertained that Bootan occupies an interval of at leaſt a degree of latitude between Bengal and Thibet.

Thus, I flatter myſelf, this diſcuſſion reſpecting the ſituation of Paridrong, joined to the information of P. Giorgi, will convince the reader, that the latitude of Laſſa, if not perfectly right in my map is, at leaſt, nearer the truth than it has uſually been repreſented. Its longitude is taken from the Lamas' map, in which it is reckoned 24° 17′ weſt from Pekin, or 91° 40′ eaſt from London. Had the bearings and latitudes of Mr. Bogle's route been taken, we ſhould not only have been able to determine the poſition of Laſſa, with ſome degree of accuracy (as the direction of the road is ſo much to the north) but alſo moſt of the intermediate places. Mr. Bogle was ſixteen days on the road from Paridrong to Chanmanning. The diſtance aſſigned between theſe places in the Lamas' map, is about 167 G. miles of horizontal diſtance; and this diſtance I have adopted in my map.

The ſouthernmoſt ridge of the Bootan mountains, riſes near a mile and half perpendicular, above the plains of Bengal, in a horizontal diſtance of only 15 miles; and from the ſummit, the aſtoniſhed traveller looks back on the plains, as on an extenſive ocean beneath him. There are not many paſſes thro' this ridge, and all are fortified. The fort of Dellamcotta, which commands the principal paſs, was taken by ſtorm in 1773 *; and the fame of this exploit made the Thibetians ſue for peace; and was the immediate occaſion of Mr. Bogle's embaſſy. The road between Bengal and Taſſaſudon, lies chiefly over the ſummits of ſtupendous mountains, or along the borders of craggy precipices; ſo that the

* By a detachment under the command of Capt. John Jones.

direct

direct diſtance is not eaſily aſcertained, even by the moſt intelligent traveller.

Between Taſſaſudon and Paridrong, is a chain of mountains ſtill higher than the other. They are viſible from the plains of Bengal, at the diſtance of 150 miles, and are commonly covered with ſnow. Theſe are a continuation of the mountains *Emodus* and *Paropamiſus* of the ancients; and are ſometimes by the moderns erroneouſly called *Caucaſus*. By the Thibetians, they are called Rimola. I take them to be in point of elevation equal to any of the mountains of the old hemiſphere. Indeed, the country of Thibet is, altogether, one of the higheſt in Aſia; it being a part of that elevated tract which gives riſe not only to the rivers of India and China, but to thoſe alſo of Siberia and Tartary: for if we examine the map of Aſia, we ſhall find that moſt of thoſe capital rivers riſe between the 31ſt and 47th degrees of latitude, and between the 70th and 97th degrees of longitude; from whence they run in every direction to the ſea, as the Rhine, Rhone, Danube, and Loire, do from the Alps in Europe.

Father Giorgi, whom I have mentioned before, has given us in his *Alphabetum Thibetanum*, an Itinerary between Calcutta and Laſſa. The diſtances he eſtimates in miles, which he probably meant for Italian, although they agree nearly with Engliſh ones. For he reckons 284 between Coſſimbuzar and Patna, which is the exact number of meaſured ſtatute miles between the two places. And between Singhya and Maiſſy, he reckons 40, for 37 meaſured ones. We may therefore conclude that he was equally fortunate in proportioning the reſt of his diſtances; although the roughneſs of the road will not always admit of forming any juſt proportion between the diſtance by the road, and the horizontal diſtance. We are almoſt entirely in the dark as to the particular direction of his courſe.

Catmandu, the capital of Napaul, is placed according to the authority of ſome MS. maps made by ſome miſſionaries who tra-

veiled from Bettyah to that place: and I found no material diſagreement between their accounts and Giorgi's. I have therefore placed Catmandu 105 G. miles nearly north from Maiſſy, and in latitude 28° 6′.

From Catmandu to Laſſa, Giorgi reckons 504 miles by the road; but it muſt be obſerved that he omits to mention the diſtances of two ſtages between Khanſa and Meſcinzungh: and as the preceding ones were of 14 and 16 miles, and the two ſucceeding ones 16 each, I may venture to add 32 miles for the two omiſſions; and then the whole diſtance will be 536 Britiſh miles, or 462 G. ones.

The horizontal diſtance between Catmandu and Laſſa (the latter being placed as deſcribed in page 93) is 364 G. miles: ſo that according to Giorgi's diſtance, one mile in five, will be taken up with the windings of the road: and this is not improbable, conſidering the mountainous nature of the country; for in the flat countries of Hindooſtan, the proportion is oftentimes 1 in 7.

The territories of Napaul extend to the mountains of Rimola, as they are called in the Lamas' map. Giorgi does not give the modern name of them; but juſtly concludes that the ancient one was Emodus. Theſe are a continuation of the chain between Taſſaſudon and Paridrong. Between Catmandu and theſe mountains, he paſſed by a famous place of worſhip, called by him *Nogliocot*, but by the Bengaleſe, Nogarcot; and which gives name to a paſs that leads to it through the Bootan mountains, on the north of Purneah *. He alſo croſſed the upper part of the *Koſi*, or Coſa river, which takes its courſe through Purneah, to the Ganges.

Tankia, or Tinkia-ling, is a fortreſs and town ſituated at the hither foot of Mount Langur, a ſecond ridge of ſtupendous mountains, ſituated about 50 miles beyond Mount Rimola; and ſaid to abound with ſuffocating exhalations, which increaſe as you aſcend;

* There is alſo a famous place of worſhip of nearly the ſame name in the mountains of Lahore.

but

but are weakeſt when the mountains are covered with ſnow. Tankia is the firſt place in Giorgi's Itinerary, that can be recogniſed in the Lamas' map: for Nialma on the Nitchou river (probably the *Nohotha* of Giorgi) does not agree with any of Giorgi's names, although its ſituation does with Catmandu; which, however, the Thibetians call Jangbu.

About 25 miles beyond Mount Langur, is the beautiful valley of Tingri, ſaid to be 50 miles in length, though but narrow. It is deſcribed by Giorgi as an earthly Paradiſe, in every reſpect ſave the ſharpneſs of the air.

The next place of note is Zuenga, or Tzuenga, a caſtle or fortreſs on the river Bontſu (ſuppoſed by Giorgi to be the *Bantiſo* of Ptolemy) and about 90 B. miles from Tankia. From hence two roads lead to Laſſa: the northernmoſt by Sgigatche (or Jiecſee as it is called in the Lamas' map) and Rimbu; the other, and which was travelled by Giorgi, is by Kiangſee, or Tchiantſe. He ſpeaks of wild horſes variouſly ſpotted, in great numbers on the banks of the Bontſu. Theſe, I preſume, are of the kind that are annually brought for ſale into Hindooſtan, where they are known by the name of *Tanyans*; and are of a hardy breed.

Kiangſe is repreſented as a fine city and fortreſs; with a convent near it, which is ſo very extenſive and magnificent, that it has the appearance of another city.

About 50 miles beyond Kiangſe, and 3 days journey ſhort of Laſſa, is the famous Lake Palte, called by the natives Jamdro, or Jangſo. It is of ſo great extent, that according to the report of the natives, it requires eighteen days to walk round it. In the Lamas' map, however, the circumference is only 150 Britiſh miles. In the middle of it, there are, according to Giorgi, a continued range of hillocks and iſlands; or, according to the Lamas' map, one vaſt iſland, incircled by a lake from 3 to 6 miles wide. On the weſtern ſhore of this iſland, or congeries of iſlands, is a monaſtery, and

and the ſeat of the *Lamiſſa* * *Turcepamo*, or *The Great Regenerate:* in whom the Thibetians think that a divine ſpirit is regenerated, as in the great Lama. The road from Kiangſe to Laſſa lies along the north ſide of this lake, a day and half's journey.

Between the lake and the river Sanpoo, which is about 12 miles, another very high ridge of mountains croſſes the road. This is named Mount Kambala, and from the top of it may be ſeen towards the north, a range of ſtill higher mountains covered with ſnow.

The river Sanpoo †, or, according to Giorgi, *Tzangciu*, or *Tzanga*, is 7 miles from the foot of Mount Kambala; and is croſſed in the way to Laſſa, about 12 miles farther on, either over a bridge, or in a boat. The bridge, as well as moſt others in this country, is compoſed of iron chains ſtretched from ſide to ſide, with planks or logs laid acroſs them.

Giorgi ſays that the chains are compoſed of 500 links, each a foot long ‡. We may conclude that the bridge is laid over the narroweſt part they could find, which, by this account, is 160 Engliſh yards in breadth; otherwiſe we might expect a larger body of water in a river that had ran at leaſt 7 or 800 miles; and had received into its bed, ſo great a number of ſtreams. I compute that at this croſſing place, the Sanpoo (which is afterwards called the Burrampooter) has as far to run to meet the ſea, as the Ganges has at its firſt entry on the plains of Hindooſtan; that is, about 1350 B. miles.

The city of Laſſa is, by the road, about 24 miles to the north-eaſtward of the croſſing place of the Sanpoo; and is ſituated in a ſpacious plain. It is not conſidered as a large city; but the houſes are of ſtone, and are ſpacious and lofty. The mountain of Putala, which contains on its ſummit the palace of the grand Lama, the High Prieſt and Sovereign of Thibet, is about 7 miles on the eaſt of the city.

* Lama ſignifies a Prieſt, or Miniſter of Religion; and Lamiſſa is the feminine of Lama.
† Sanpoo, in the language of Thibet, means *The River*.
‡ I take it for granted that he means Roman feet.

Much confuſion ariſes from the application of ſo many different names to this capital of Thibet. Giorgi tells us, that the proper name of it, in the language of Thibet is Baronthala; but that the Tartars call it Laſſa, or Lahaſſa. Other accounts call it Tonker; and apply the names Laſſa and Baronthala to the diſtrict which contains Tonker and Putala. And again others give the name of Putala inſtead of Laſſa, to the capital of Thibet. But we ought to apply the name Laſſa, or Lahaſſa, to the capital; and to conſider Putala as the caſtle and palace of the Lama, and his ordinary place of reſidence.

By Thibet, or more properly Great Thibet, we are to underſtand all that vaſt country extending from the ſources of the Indus to the borders of China; and from Hindooſtan, to the great deſert of Cobi, northward; though we have but a faint idea of its extent towards that quarter. Its length from eaſt to weſt cannot be leſs than 1600 Britiſh miles: its breadth is very unequal. We are informed generally that it is divided into three parts; that is, Upper, Middle, and Lower Thibet. The upper diviſion ſeems to reſpect the countries towards the ſources of the Ganges and Sanpoo rivers: the middle, that in which Laſſa is ſituated, and of which it forms the centre: and the lower Thibet, that which borders on China. But the ſubject is obſcure, and likely to remain ſo. I am not informed, whether or not the country called Little Thibet is ſubject to Laſſa: This is ſituated between Upper Thibet and Caſhmere.

Conſidering the exceeding rough and ſterile ſtate of the country of Thibet, and the ſeverity of its climate, from its wonderful elevation, we are aſtoniſhed to find its inhabitants in a high ſtate of civilization; their houſes lofty and built of ſtone: and the uſeful manufactures in ſome degree of improvement. All theſe advantages they probably owe to their vicinity to the Chineſe; to whom, indeed the Lama is tributary *.

* For an account of Thibet, See Aſtley's Collection, Vol. IV.; Phil. Tranſ. Vol. LXVIII.; and the Alphabetum Thibetanum.

The

The countries of Sirinagur, Almora, Gor, Morung, and Napaul, are not at preſent conſidered as dependencies of Thibet, as Bootan is. The poſition of Latac, called alſo *Leh*, and Chaparang, or Dſaprong; as well as Giti, Mila, &c. are all from D'Anville.

In placing the heads of the Ganges and Sanpoo rivers, I have followed M. D'Anville's correction of the Lamas' map in Du Halde, as given in his firſt part of the map of Aſia, publiſhed in 1751: and have continued the courſe of the Ganges to the place where it enters Hindooſtan, from the ſame map. I have ſaid before, that I conſider this part of the Lamas' map as a very vague performance; but the want of better materials obliges me to make uſe of it. I ſuſpect that the Ganges does not take quite ſo wide a circuit to the northweſt, as is there deſcribed.

A circumſtance attending the courſes of theſe rivers, in reſpect to each other, is remarkably ſingular. Iſſuing from oppoſite ſides of the ſame ridge of mountains, they direct their courſes towards oppoſite quarters, till they are more than 1200 miles aſunder; and afterwards meet in one point near the ſea, after each has performed a winding courſe of more than 2000 miles. Our ignorance of this circumſtance, till ſo very lately, is a ſtrong preſumptive proof that there yet remains a vaſt field for improvement in the geography of the eaſtern part of Aſia.

FINIS.

APPENDIX.

ADVERTISEMENT.

THE within Tract has already made its appearance in the Philoſophical Tranſactions of 1781. It was ſuggeſted to the Author, that it would make a very proper Appendix to the MEMOIR OF THE MAP OF HINDOOSTAN; and he accordingly offers it to the Public under that denomination: happy ſhould the Appendix meet a degree of indulgence, equal to what the Work itſelf has experienced.

AN

ACCOUNT

OF THE

GANGES

AND

BURRAMPOOTER RIVERS.

BOHEMIAN FOLK TALES

AND

GYPSIES

OF THE

ACCORDION

IN

AN ACCOUNT, &c.

THE * GANGES and † BURRAMPOOTER Rivers, together with their numerous branches and adjuncts, interſect the country of BENGAL (which, independent of BAHAR and ORISSA, is ſomewhat larger than GREAT BRITAIN) in ſuch a variety of directions, as to form the moſt compleat and eaſy inland navigation that can be conceived. So equally and admirably diffuſed are thoſe natural canals, over a country that approaches nearly to a perfect plane, that, after excepting the lands contiguous to Burdwan, Birboom, &c. which may be reckoned a ſixth part of Bengal, we may ſafely pronounce, that every other part of the country, has, even in the dry ſeaſon, ſome navigable ſtream within 25 miles at fartheſt, and more commonly within a third part of that diſtance.

It is ſuppoſed, that this inland navigation gives conſtant employment to 30,000 boatmen. Nor will it be wondered at, when it

* The proper name of this river in the language of Hindooſtan (or Indoſtan) is *Padda* or *Padda*. It is alſo named *Burra Gonga*, or the Great River; and *Gonga*, the River, by way of eminence; and from this, doubtleſs, the European names of the river are derived.

† The orthography of this word, as given here, is according to the common pronunciation in Bengal; but it is ſaid to be written in the Shanſcrit language, *Brahma-pootar*; which ſignifies the Son of *Brahma*.

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is known, that all the ſalt, and a large proportion of the food conſumed by ten millions of people are conveyed by water within the kingdom of Bengal and its dependencies. To theſe muſt be added, the tranſport of the commercial exports and imports, probably to the amount of two millions ſterling *per annum*; the interchange of manufactures and products throughout the whole country; the fiſheries; and the article of travelling *.

Theſe rivers, which a late ingenious Gentleman aptly termed ſiſters and rivals (he might have ſaid *twin* ſiſters, from the contiguity of their ſprings) exactly reſemble each other in length of courſe; in bulk, until they approach the ſea; in the ſmoothneſs and colour of their waters; in the appearance of their borders and iſlands; and, finally, in the height to which their floods riſe with the periodical rains. Of the two, the Burrampooter is the largeſt; but the difference is not obvious to the eye. They are now well known to derive their ſources from the vaſt mountains of THIBET †; from whence they proceed in oppoſite directions; the Ganges ſeeking the plains of HINDOOSTAN (or INDOSTAN) by the weſt; and the Burrampooter by the eaſt; both purſuing the early part of their courſe through rugged vallies and defiles, and ſeldom viſiting the habitations of men. The Ganges, after wandering about 750 miles through theſe mountainous regions, iſſues forth a deity to the ſuperſtitious, yet gladened, inhabitant of Hindooſtan ‡. From Hurd-

war

* The embarkations made uſe of vary in bulk from 180 tons down to the ſize of a wherry. Thoſe from 30 to 50 tons are reckoned the moſt eligible for tranſporting merchandize.

† Theſe are amongſt the higheſt of the mountains of the old hemiſphere. I was not able to determine their height; but it may in ſome meaſure be gueſſed, by the circumſtance of their riſing conſiderably above the horizon, when viewed from the plains of Bengal, at the diſtance of 150 miles.

‡ The fabulous account of the origin of the Ganges (as communicated by my learned and ingenious friend C. W. BOUGHTON ROUSE, Eſq;) is, that it flows out of the foot of

BESCHAN

war (or Hurdoar) in latitude 30°, where it guſhes through an opening in the mountains, it flows with a ſmooth navigable ſtream through delightful plains, during the remainder of its courſe to the ſea (which is about 1350 miles) diffuſing plenty immediately by means of its living productions; and ſecondarily by enriching the adjacent lands, and affording an eaſy means of tranſport for the productions of its borders. In a military view, it opens a communication between the different poſts, and ſerves in the capacity of a *military way* through the country; renders unneceſſary the forming of magazines; and infinitely ſurpaſſes the celebrated inland navigation of North America, where the *carrying places* not only obſtruct the progreſs of an army, but enable the adverſary to determine his place and mode of attack with certainty.

In its courſe through the plains, it receives eleven rivers, ſome of which are equal to the Rhine, and none ſmaller than the Thames, beſides as many others of leſſer note. It is owing to this vaſt influx of ſtreams, that the Ganges exceeds the Nile ſo greatly in point of magnitude, whilſt the latter exceeds it in length of courſe by one-third. Indeed, the Ganges is inferior in this laſt reſpect, to many of the northern rivers of Aſia; though I am inclined to think that it diſcharges as much or more water than any of them,

BESCHAN (the ſame with Viſtnou, the PRESERVING DEITY) from whence, ſay the Bramins, it has its name *Padda*; that word ſignifying foot in the Shanſcrit language: and that in its courſe to the plains of Hindooſtan it paſſes through an immenſe rock ſhaped like a Cow's-head.

The allegory is highly expreſſive of the veneration which the Hindoos have for this famous ſtream; and no leſs ſo of their gratitude to the Author of Nature for beſtowing it: for it deſcribes the bleſſing as flowing purely from his bounty and goodneſs.

The rock before mentioned has, I believe, never been viſited by any European; and is even allowed by moſt of the natives to bear no reſemblance to the object from whence it is denominated. However, as the effects of ſuperſtition do often long ſurvive the illuſions that gave it birth, the rock or cavern ſtill preſerves the name of *Gowmooky*, or Cow's-head.

becauſe thoſe rivers do not lie within the limits of the periodical rains *.

The bed of the Ganges is, as may be ſuppoſed, very unequal in point of width. From its firſt arrival in the plains at Hurdwar, to the conflux of the Jumnah (the firſt river of note that joins it) its bed is generally from a mile to a mile and a quarter wide; and, compared with the latter part of its courſe, tolerably ſtraight. From hence, downward, its courſe becomes more winding, and its bed conſequently wider †, till, having ſucceſſively received the waters of the Gogra, Soane, and Gunduck, beſides many ſmaller ſtreams, its bed has attained its full width; although, during the remaining 600 miles of its courſe it receives many other principal

* The proportional lengths of courſe of ſome of the moſt noted rivers in the world are ſhewn nearly by the following numbers:

European Rivers.	
Thames,	1
Rhine,	5¼
Danube,	7
Wolga,	9½
Aſiatic rivers.	
Indus,	5½
Euphratus,	8½
Ganges,	9½
Burrampooter,	9½
Nou Kian, or Ava River,	9½
Jenniſea,	10
Oby,	10½
Amoor,	11
Lena,	11½
Hoanho (of China),	13½
Kian Keu (of ditto),	15½
African river.	
Nile,	12½
American rivers.	
Miſſiſipi,	8
Amazons,	15¾

† This will be explained when the windings of the river are treated of.

ſtreams.

ſtreams. Within this ſpace it is, in the narroweſt parts of its bed, half a mile wide, and in the wideſt, three miles; and that, in places where no iſlands intervene. The ſtream within this bed is always either increaſing or decreaſing, according to the ſeaſon. When at its loweſt (which happens in April) the principal channel varies from 400 yards to a mile and a quarter; but is commonly about three quarters of a mile, in width.

The Ganges is fordable in ſome places above the conflux of the Jumnah, but the navigation is never interrupted. Below that, the channel is of conſiderable depth, for the additional ſtreams bring a greater acceſſion of depth than width. At 500 miles from the ſea, the channel is thirty feet deep when the river is at its loweſt; and it continues at leaſt this depth to the ſea, where the ſudden expanſion of the ſtream deprives it of the force neceſſary to ſweep away the bars of ſand and mud thrown acroſs it by the ſtrong ſoutherly winds; ſo that the principal branch of the Ganges cannot be entered by large veſſels.

About 220 miles from the ſea (but 300 reckoning the windings of the river) commences the head of the *Delta* of the Ganges, which is conſiderably more than twice the area of that of the Nile. The two weſternmoſt branches, named the Coſſimbuzar and Jellinghy Rivers, unite, and form what is afterwards named the Hoogly River, which is the port of Calcutta, and the only branch of the Ganges that is commonly navigated by ſhips *. The Coſſimbuzar River is almoſt dry from October to May; and the

* The Hoogly River, or weſternmoſt branch of the Ganges, has a much deeper outlet to the ſea than the principal branch. Probably this may be owing to its precipitating a leſs quantity of mud than the other; the quantity of the Ganges water diſcharged here being leſs than in the other in the proportion of one to ſix. From the difficulties that occur in navigating the entrance of the Hoogly River, many are led to ſuppoſe, that the channels are ſhallow. The difficulties, however, ariſe from bringing the ſhips acroſs ſome of the ſand-banks, which project ſo far into the ſea, that the channels between them cannot eaſily be traced from without.

Jellinghy

Jellinghy River (although a ſtream runs in it the whole year) is in ſome years unnavigable during two or three of the dryeſt months; ſo that the only ſubordinate branch of the Ganges, that is at all times navigable, is the Chundnah River, which ſeparates at Moddapour, and terminates in the Hooringotta.

That part of the Delta bordering on the ſea, is compoſed of a labyrinth of rivers and creeks, all of which are ſalt, except thoſe that immediately communicate with the principal arm of the Ganges. This tract, known by the name of the Woods, or *Sunderbunds*, is in extent equal to the principality of WALES; and is ſo completely enveloped in woods, and infeſted with Tygers, that if any attempts have ever been made to clear it (as is reported) they have hitherto miſcarried. Its numerous canals are ſo diſpoſed as to form a compleat inland navigation throughout and acroſs the lower part of the Delta, without either the delay of going round the head of it, or the hazard of putting to ſea. Here ſalt, in quantities equal to the whole conſumption of Bengal and its dependencies, is made and tranſported with equal facility: and here alſo is found an inexhauſtible ſtore of timber for boat-building. The breadth of the lower part of this Delta is upwards of 180 miles; to which, if we add that of the two branches of the river that bound it, we ſhall have about 200 miles for the diſtance to which the Ganges expands its branches at its junction with the ſea.

It has been obſerved before, that the courſe of this river, from Hurdwar to the ſea, is through an uniform plain, or, at leaſt, what appears ſuch to the eye: for, the declivity is much too ſmall to be perceptible. A ſection of the ground, parallel to one of its branches, in length 60 miles, was taken by order of Mr. HASTINGS; and it was found to have about nine inches deſcent in each mile, reckoning in a ſtraight line, and allowance being made for the curvature of the earth. But the windings of the river were ſo great, as to reduce the declivity on which the water ran, to leſs

than

than four inches *per* mile: and by a compariſon of the velocity of the ſtream at the place of experiment with that in other places, I have no reaſon to ſuppoſe, that its general deſcent exceeds it *.

The medium rate of motion of the Ganges is leſs than three miles an hour in the dry months. In the wet ſeaſon, and during the draining off of the waters from the inundated lands, the current runs from five to ſix miles an hour; but there are inſtances of its running ſeven, and even eight miles, in particular ſituations, and under certain circumſtances. I have an experiment of my own on record, in which my boat was carried 56 miles in eight hours; and that againſt ſo ſtrong a wind, that the boat had evidently no progreſſive motion through the water.

When we conſider, that the velocity of the ſtream is three miles in one ſeaſon, and five or more in the other, on the ſame deſcent of four inches *per* mile; and, that the motion of the inundation is only half a mile *per* hour, on a much greater deſcent; no farther proof is required how ſmall the proportion of velocity is, that the deſcent communicates. It is then, to the *impetus* originating at the ſpring head, or at the place where adventitious waters are poured in, and ſucceſſively communicated to every part of the ſtream, that we are principally to attribute the velocity, which is greater or leſſer, according to the quantity of water poured in.

In common, there is found on one ſide of the river an almoſt perpendicular bank, more or leſs elevated above the ſtream, according to the ſeaſon, and with deep water near it: and on the oppoſite ſide a bank, ſhelving away ſo gradually as to occaſion ſhallow water at ſome diſtance from the margin. This is more particularly the caſe in the moſt winding parts of the river, becauſe the very opera-

* M. De Condamine found the deſcent of the river Amazons, in a ſtraight courſe of about 1860 miles, to be about 1020 Engliſh feet, or $6\frac{1}{3}$ inches in a mile. If we allow for the windings (which in the Ganges are about one mile and $\frac{1}{9}$ in 3, taking its whole courſe through the plains) it probably would not exceed 4 inches in a mile.

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tion of winding produces the ſteep and ſhelving banks *: for the current is always ſtrongeſt on the external ſide of the curve formed by the ſerpentine courſe of the river; and its continual action on the banks either undermines them †, or waſhes them down. In places where the current is remarkably rapid, or the ſoil uncommonly looſe, ſuch tracts of land are ſwept away in the courſe of one ſeaſon, as would aſtoniſh thoſe who have not been eye-witneſſes to the magnitude and force of the mighty ſtreams occaſioned by the periodical rains of the tropical regions. This neceſſarily produces a gradual change in the courſe of the river; what is loſt on one ſide being gained on the other, by the mere operation of the ſtream: for the fallen pieces of the bank diſſolve quickly into muddy ſand, which is hurried away by the current along the border of the channel, to the point from whence the river turns off to form the next reach; where the ſtream growing weak, it finds a reſting place; and helps to form a ſhelving bank, which commences at the point, and extends downwards, along the ſide of the ſucceeding reach.

To account for the ſlackneſs of the current at the point, it is neceſſary to obſerve, that the ſtrongeſt part of it, inſtead of turning ſhort round the point, preſerves for ſome time the direction given it by the laſt ſteep bank; and is accordingly thrown obliquely acroſs the bed of the river to the bay on the oppoſite ſide, and purſues its courſe along it, till the intervention of another point again obliges it to change ſides.

* Hence it is, that the ſection of a river, that winds through a looſe ſoil, approaches nearly to an obtuſe angled-triangle, one of whoſe ſides is exceedingly ſhort and diſproportioned to the other two . But when a river perſeveres in a ſtraight courſe, the ſection becomes nearly the half of an ellipſis divided longitudinally . See Plate I.

† In the dry ſeaſon ſome of theſe banks are more than 30 feet high, and often fall down in pieces of many tons weight, and occaſion ſo ſudden and violent an agitation of the water, as ſometimes to ſink large boats that happen to be near the ſhore.

In

In thoſe few parts of the river that are ſtraight, the banks undergo the leaſt alteration *, as the current runs parallel to them; but the leaſt inflection of courſe, has the effect of throwing the current againſt the bank; and if this happens in a part where the ſoil is compoſed of looſe ſand, it produces in time a ſerpentine winding.

It is evident, that the repeated additions made to the ſhelving bank before mentioned, become in time an encroachment on the channel of the river; and this is again counter-balanced by the depredations made on the oppoſite ſteep bank, the fragments of which, either bring about a repetition of the circumſtances above recited, or form a bank or ſhallow in the midſt of the channel. Thus a ſteep and a ſhelving bank are alternately formed in the crooked parts of the river (the ſteep one being the *indented* ſide, and the ſhelving one the *projecting)*; and thus, a continual fluctuation of courſe is induced in all the winding parts of the river; each meander having a perpetual tendency to deviate more and more from the line of the general courſe of the river, by eating deeper into the bays, and at the ſame time adding to the points; till either the oppoſite bays meet, or the ſtream breaks through the narrow iſthmus, and reſtores a temporary ſtraightneſs to the channel.

Several of the windings of the Ganges and its branches are faſt approaching to this ſtate; and in others, it actually exiſts at preſent. The experience of theſe changes ſhould operate againſt attempting canals of any length, in the higher parts of the country; and I much doubt, if any in the lower parts would long continue navigable. During eleven years of my reſidence in Bengal, the outlet or head of the Jellinghy River was gradually removed three quarters of a mile farther down: and by two ſurveys of a part of the adjacent bank of the Ganges, taken about the diſtance of nine years

* It is more than probable, that the ſtraight parts owe their exiſtence to the tenacity of the ſoil of which their banks are compoſed. Whatever the cauſe may be, the effect very clearly points out ſuch ſituations as the propereſt for placing towns in.

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from each other, it appeared that the breadth of an Engliſh mile and a half had been taken away. This is, however, the moſt rapid change that I have noticed; a mile in ten or twelve years being the uſual rate of incroachment, in places where the current ſtrikes with the greateſt force; namely, where two adjoining reaches approach neareſt to a right angle. In ſuch ſituations it not unfrequently excavates gulfs * of conſiderable length within the bank. Theſe gulfs are in the direction of the ſtrongeſt parts of the ſtream; and are, in fact, the *young ſhoots* (if I may ſo expreſs myſelf) which in time ſtrike out and become branches of the river; for we generally find them at thoſe turnings that have the ſmalleſt angles †.

Two cauſes, widely different from each other, occaſion the meandering courſes of rivers; the one, the irregularity of the ground through which they run, which obliges them to wander in queſt of a declivity; the other, the looſeneſs of the ſoil, which yields to the friction of the border of the ſtream. The meanders in the firſt caſe, are, of courſe, as digreſſive and irregular as the ſurface they are projected on: but, in the latter, they are ſo far reducible to rule, that rivers of unequal bulk will, under ſimilar circumſtances, take a circuit to wind in, whoſe extent is in proportion to their reſpective breadths: for I have obſerved, that when a branch of the Ganges is fallen ſo low as to occupy only a part of its bed, it no longer continues in the line of its old courſe; but works itſelf a new channel, which winds from ſide to ſide acroſs the former one. I have obſerved too, that in two ſtreams, of equal ſize, that which

* The Count De Buffon adviſes the digging of ſuch gulfs in the banks of ordinary rivers, with a view to divert the current, when bridges or other buildings are endangered by it.

† The courſes of theſe branches at the efflux, generally, if not always, become retrograde to the courſe of the river: for, a ſand bank accumulating at the upper point of ſeparation, gives an oblique direction upwards, to the ſtream, which would otherwiſe run out at right angles. This ſand bank being always on the increaſe, occaſions a corroſion of the oppoſite bank; and by this means all, or moſt of the outlets, have a progreſſive motion downwards; as I have before remarked of the Jellinghy River, in the foregoing page.

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has the ſloweſt current has alſo the ſmalleſt windings: for as theſe (in the preſent caſe) are ſolely owing to the depredations made on the banks by the force of the current; ſo the extent of theſe depredations, or, in other words, the dimenſions of the windings, will be determined by the degree of force acting on the banks.

The windings of the Ganges in the plains, are, doubtleſs, owing to the looſeneſs of the ſoil: and (I think) the proof of it is, that they are perpetually changing; which thoſe, originally induced by an inequality of ſurface, can ſeldom, or never do *.

I can eaſily ſuppoſe, that if the Ganges was turned into a ſtraight canal, cut through the ground it now traverſes in the moſt winding parts of its courſe, its ſtraightneſs would be of ſhort duration. Some yielding part of the bank, or that which happened to be the moſt ſtrongly acted on, would firſt be corroded or diſſolved: thus a bay or cavity would be formed in the ſide of the bank. This begets an inflection of the current, which, falling obliquely on the ſide of the bay, corrodes it inceſſantly. When the current has paſſed the innermoſt part of the bay, it receives a new direction, and is thrown obliquely towards the oppoſite ſide of the canal, depoſiting in its way the matter excavated from the bay, and which begins to form a ſhallow or bank contiguous to the border of the canal. Here then is the origin of ſuch windings as owe their exiſtence to the nature of the ſoil. The bay, ſo corroded, in time becomes large enough to give a new direction to the body of the canal: and the matter excavated from the bay, is ſo diſpoſed as to aſſiſt in throwing the current againſt the oppoſite bank; where a proceſs, ſimilar to that I have been deſcribing, will be begun.

* It has been remarked, that the courſes of rivers become more winding as they approach the ſea. This, I believe, will only hold good in ſuch as take the latter part of their courſe through a ſandy ſoil. In the Ganges, and other rivers ſubject to conſiderable variations in the bulk of their ſtreams, the beſt marks of the vicinity of the ſea, are, the lowneſs of the river banks, and the increaſing muddineſs of the ſhallows in its bed.

The action of the current on the bank will alſo have the effect of deepening the border of the channel near it; and this again increaſes the velocity of the current in that part. Thus would the canal gradually take a new form, till it became what the river now is. Even when the windings have leſſened the deſcent one half, we ſtill find the current too powerful for the banks to withſtand it.

There are not wanting inſtances of a total change of courſe in ſome of the Bengal rivers *. The Coſa River (equal to the Rhine) once ran by Purneah, and joined the Ganges oppoſite Rajemal. Its junction is now 45 miles higher up. Gour, the ancient capital of Bengal, ſtood on the old bank of the Ganges: although its ruins are 4 or 5 miles from the preſent bank.

Appearances favour very ſtrongly the opinion, that the Ganges had its former bed in the tract now occupied by the lakes and moraſſes between Nattore and Jaffiergunge, ſtriking out of its preſent courſe at Bauleah, and paſſing by Pootyah. With an equal degree of probability (favoured by tradition) we may trace its ſuppoſed courſe by Dacca, to a junction with the Burrampooter or Megna near Fringybazar; where the accumulation of two ſuch mighty ſtreams, probably ſcooped out the preſent amazing bed of the MEGNA †. See plate II.

In tracing the ſea coaſt of the Delta, we find no leſs than eight openings; each of which, without heſitation, one pronounces to have been in its time the principal mouth of the Ganges. Nor is the occaſional deviation of the principal branch, probably, the only cauſe of fluctuation in the dimenſions of the Delta. One obſerves, that the Deltas of moſt capital rivers (the tropical ones particularly) encroach upon the ſea. Now, is not this owing to the mud and

* The Mootyjyl lake is one of the windings of a former channel of the Coſſimbuzar River.

† *Megna* and *Burrampooter* are names belonging to the ſame river in different parts of its courſe. The Megna falls into the Burrampooter; and, though a much ſmaller river, communicates its name to the other during the reſt of its courſe.

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ſand brought down by the rivers, and gradually depoſited, from the remoteſt ages down to the preſent time? The rivers, we know, are loaded with mud and ſand at their entrance into the ſea; and we alſo know, that the ſea recovers its tranſparency at the diſtance of twenty leagues from the coaſt; which can only ariſe from the waters having precipitated their earthy particles within that ſpace. The ſand and mud banks at this time, extend twenty miles off ſome of the iſlands in the mouths of the Ganges and Burrampooter; and riſe in many places within a few feet of the ſurface. Some future generation will probably ſee theſe banks riſe above water, and ſucceeding ones poſſeſs and cultivate them! Next to earthquakes, perhaps the floods of the tropical rivers produce the quickeſt alterations in the face of our globe. Extenſive iſlands are formed in the channel of the Ganges, during an interval far ſhort of that of a man's life; ſo that the whole proceſs is completed in a period that falls within the compaſs of his obſervation *. Some of theſe iſlands, four or five miles in extent, are formed at the angular turnings of the river, and were originally large ſand banks thrown up round the points (in the manner before deſcribed) but afterwards inſulated by breaches of the river. Others are formed in the ſtraight parts of the river, and in the middle of the ſtream; and owe their origin to ſome obſtruction lurking at the bottom. Whether this be the fragments of the river bank; a large tree ſwept down from it; or a ſunken boat; it is ſufficient for a foundation: and a heap of ſand is quickly collected below it. This accumulates amazingly faſt: in the courſe of a few years it peeps above water, and having now uſurped a conſiderable portion of the channel, the river borrows on each ſide to ſupply the deficiency in its bed; and in ſuch parts of the river we always find ſteep banks on both ſides †. Each periodi-

* Accordingly, the laws reſpecting alluvion are aſcertained with great preciſion.

† This evidently points out the means for preventing encroachments on a river bank in the ſtraight parts of its courſe, *viz.* to remove the ſhallows that accumulate in the middle of its channel.

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cal flood brings an addition of matter to this growing iſland; increaſing it in height as well as extenſion, until its top is perfectly on a level with the banks that include it: and at that period of its growth it has mould enough on it for the purpoſes of cultivation, which is owing to the mud left on it when the waters ſubſide, and is indeed a part of the œconomy which nature obſerves in fertilizing the lands in general.

Whilſt the river is forming new iſlands in one part, it is ſweeping away old ones in other parts. In the progreſs of this deſtructive operation, we have opportunities of obſerving, by means of the ſections of the falling bank, the regular diſtribution of the ſeveral *ſtrata* of ſand and earths, lying above one another in the order in which they decreaſe in gravity. As they can only owe this diſpoſition to the agency of the ſtream that depoſited them, it would appear, that theſe ſubſtances are ſuſpended at different heights in the ſtream, according to their reſpective gravities. We never find a ſtratum of earth under one of ſand; for the muddy particles float neareſt the ſurface *. I have counted ſeven diſtinct ſtrata in a ſection of one of theſe iſlands. Indeed, not only the iſlands, but moſt of the river banks wear the ſame appearance: for as the river is always changing its preſent bed, and verging towards the ſite of ſome former one now obliterated, this muſt neceſſarily be the caſe.

As a ſtrong preſumptive proof of the wandering of the Ganges from the one ſide of the Delta to the other, I muſt obſerve, that there is no appearance of *virgin* earth between the Tiperah Hills on the eaſt, and the province of Burdwan on the weſt; nor on the north till we arrive at Dacca and Bauleah. In all the ſections of the numerous creeks and rivers in the Delta, nothing appears but ſand and black mould in regular ſtrata, till we arrive at the clay that

* A glaſs of water taken out of the Ganges, when at its height, yields about one part in four of mud. No wonder then that the ſubſiding waters ſhould quickly form a ſtratum of earth; or that the Delta ſhould encroach upon the ſea!

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forms the lower part of their beds. There is not any ſubſtance ſo coarſe as gravel either in the Delta or nearer the ſea than 400 miles *, where a rocky point, a part of the baſe of the neighbouring hills, projects into the river: but out of the vicinity of the great rivers the ſoil is either red, yellow, or of a deep brown.

I come now to the particulars of the annual ſwelling and overflowing of the Ganges †.

It appears to owe its increaſe as much to the rain water that falls in the mountains contiguous to its ſource, and to the ſources of the great northern rivers that fall into it, as to that which falls in the plains of Hindooſtan; for it riſes fifteen feet and a half out of thirty-two (the ſum total of its riſing) by the latter end of June: and it is well known, that the rainy ſeaſon does not begin in moſt of the flat countries till about that time. In the mountains it begins early in ‡ April; and by the latter end of that month, when the rain-water has reached Bengal, the rivers begin to riſe, though by very ſlow degrees; for the increaſe is only about an inch *per* day for the firſt fortnight. It then gradually augments to two and three inches before any quantity of rain falls in the flat countries; and when the rain becomes general, the increaſe on a medium is five inches *per* day. By the latter end of July all the lower parts of Bengal, contiguous to the Ganges and Burrampooter, are overflowed,

* At Oudanulla.

† An opinion has long prevailed, that the ſwelling of the Ganges, previous to the commencement of the rainy ſeaſon in the flat countries, is in a great meaſure owing to the melting of the ſnow in the mountains. I will not go ſo far as totally to diſallow the fact; but can by no means ſuppoſe, that the quantity of ſnow water bears any proportion to the increaſe of the river.

‡ The vaſt collection of vapours, wafted from the ſea by the ſoutherly or ſouth-weſt monſoon, are ſuddenly ſtopped by the lofty ridge of mountains that runs from eaſt to weſt through Thibet. It is obvious, that the accumulation and condenſation of theſe vapours, muſt firſt happen in the neighbourhood of the obſtacle; and ſucceſſively in places more remote, as freſh ſupplies arrive to fill the atmoſphere. Hence the priority of commencement of the rainy ſeaſon in places that lie neareſt the mountains.

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ed, and form an inundation of more than a hundred miles in width; nothing appearing but villages and trees, excepting very rarely the top of an elevated ſpot (the artificial mound of ſome deſerted village) appearing like an iſland.

The inundations in Bengal differ from thoſe in Egypt in this particular, that the Nile owes its floods *entirely* to the rain-water that falls in the mountains near its ſource; but the inundations in Bengal are as much occaſioned by the rain that falls there, as by the waters of the Ganges; and as a proof of it, the lands in general are overflowed to a conſiderable height long before the bed of the river is filled. It muſt be remarked, that the ground adjacent to the river bank, to the extent of ſome miles, is conſiderably higher than the reſt of the country *, and ſerves to ſeparate the waters of the inundation from thoſe of the river until it overflows. This high ground is in ſome ſeaſons covered a foot or more; but the height of the inundation within, varies, of courſe, according to the irregularities of the ground, and is in ſome places twelve feet.

Even when the inundation becomes general, the river ſtill ſhews itſelf, as well by the graſs and reeds on its banks, as by its rapid and muddy ſtream; for the water of the inundation acquires a blackiſh hue, by having been ſo long ſtagnant amongſt graſs and other vegetables: nor does it ever loſe this tinge, which is a proof of the predominancy of the rain water over that of the river; as the ſlow rate

All the rivers that are ſituated within the limits of the monſoons, or ſhifting trade winds, are ſubject to overflowings at annually ſtated periods, like the Ganges: and theſe periods return during the ſeaſon of the wind that brings vapours from the ſea (which in Bengal, &c. is the ſoutherly one) and this being periodical, the falls of rain muſt neceſſarily be ſo too.

The northerly wind, which blows only over the land, is dry; for no rain (except caſual ſhowers) falls during the continuance of that monſoon.

* This property of the bank is well accounted for by Count BUFFON, who imputes it to the precipitation of mud made by the waters of the river, when it overflows. The inundation, ſays he, purifies itſelf as it flows over the plain; ſo that the precipitation muſt be greateſt on the parts neareſt to the margin of the river.

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of motion of the inundation (which does not exceed half a mile *per* hour) is of the remarkable flatneſs of the country.

There are particular tracts of land, which, from the nature of their culture, and ſpecies of productions, require leſs moiſture than others; and yet, by the lowneſs of their ſituation would remain too long inundated, were they not guarded by dikes or dams, from ſo copious an inundation as would otherwiſe happen, from the great elevation of the ſurface of the river above them. Theſe dikes are kept up at an enormous expence; and yet do not always ſucceed, for want of tenacity in the ſoil of which they are compoſed. It is calculated that the length of theſe Dikes collectively, amount to more than a 1000 Engliſh miles. Some of them, at the Baſe, are equal to the thickneſs of an ordinary Rampart. One particular branch of the Ganges, (navigable only during the rainy ſeaſon, but then equal to the Thames at Chelſea) is conducted between two of theſe Dikes, for about 70 miles: and when full, the paſſengers in the boats, look down on the adjacent country, as from an eminence.

During the ſwoln ſtate of the river, the tide totally loſes its effect of counteracting the ſtream; and in a great meaſure that of ebbing and flowing, except very near the ſea. It is not uncommon for a ſtrong wind, that blows up the river for any continuance, to ſwell the waters two feet above the ordinary level at that ſeaſon: and ſuch accidents have occaſioned the loſs of whole crops of rice *. A very tragical event happened at Luckipour † in 1763, by a ſtrong gale of wind conſpiring with a high ſpring tide, at a ſeaſon when the periodical flood was within a foot and half of its higheſt pitch.

* The rice I ſpeak of is of a particular kind; for the growth of its ſtalk keeps pace with the increaſe of the flood at ordinary times, but is deſtroyed by a too ſudden riſe of the water. The harveſt is often reaped in boats. There is alſo a kind of graſs which overtops the flood in the ſame manner, and at a ſmall diſtance has the appearance of a field of the richeſt verdure.

† About fifty miles from the ſea.

It is ſaid that the waters roſe ſix feet above the ordinary level. Certain it is, that the inhabitants of a conſiderable diſtrict, with their houſes and cattle, were totally ſwept away; and, to aggravate their diſtreſs, it happened in a part of the country which ſcarce produces a ſingle tree for a drowning man to eſcape to.

Embarkations of every kind traverſe the inundation: thoſe bound upwards, availing themſelves of a direct courſe and ſtill water, at a ſeaſon when every ſtream ruſhes like a torrent. The wind too, which at this ſeaſon blows regularly from the ſouth-eaſt *, favours their progreſs; inſomuch, that a voyage, which takes up nine or ten days by the courſe of the river when confined within its banks, is now effected in ſix. Huſbandry and grazing are both ſuſpended; and the peaſant traverſes in his boat, thoſe fields which in another ſeaſon he was wont to plow; happy that the elevated ſite of the river banks place the herbage they contain, within his reach, otherwiſe his cattle muſt periſh.

The following is a table of the gradual increaſe of the Ganges and its branches, according to obſervations made at Jellinghy and Dacca.

At Jellinghy.	Ft.	In.	At Dacca. Ft	In.
In May it roſe - - -	6	0	2	4
June - - - -	9	6	4	6
July - - - -	12	6	5	6
In the firſt half of Auguſt -	4	0	1	11
	32	0	14	3

* Although in the gulf or bay of Bengal the monſoon blows from the S. S. W. and S. W. yet in the eaſtern and northern parts of Bengal it blows from the S. E. or E. S. E.

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Theſe obſervations were made in a ſeaſon, when the waters roſe rather higher than uſual; ſo that we may take 31 feet for the medium of the increaſe.

It muſt be obſerved, that the Ganges riſes in a more conſiderable degree than the northern rivers that communicate with it, in the lower parts of its courſe (the Burrampooter excepted) and this is evident by the different circumſtances that take place on the mixing of the waters of the Ganges and Teeſta rivers, in the different ſeaſons. The Teeſta is a large river which runs almoſt parallel to the Ganges, for near 150 miles. During the dry ſeaſon, the waters of the Teeſta run into thoſe of the Ganges by two diſtinct channels, ſituated about 20 miles from each other; and a third channel at the ſame time diſcharges itſelf into the Megna. But during the ſeaſon of the floods, the Ganges runs into the Teeſta, whoſe outlet is then confined to the channel that communicates with the Megna. This alone, is ſufficient to ſhew how trifling the deſcent of theſe rivers muſt be, whoſe courſes are thus regulated (not by the declivity of their beds, but) by their heights in reſpect to each other; which, like the flux and reflux of the tide, have the effect of giving contrary directions to the ſtream, at different ſeaſons.

The inundation is nearly at a ſtand for ſome days preceding the middle of Auguſt, when it begins to run off; for although great quantities of rain fall in the flat countries, during Auguſt and September, yet, by a partial ceſſation of the rains in the mountains, there happens a deficiency in the ſupplies neceſſary to keep up the inundation *. The quantity of the daily decreaſe of the river is nearly in the following proportion: during the latter half of Auguſt, and all September, from three to four inches; from Septem-

* I have ſtated the middle of Auguſt for the period when the waters begin to run off; and in general it happens with more regularity than the viciſſitudes of the ſeaſons do. But there are exceptions to it; for in the year 1774 the rivers kept up for near a month after the uſual time.

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ber to the end of November, it gradually leſſens from three inches to an inch and a half; and from November to the latter end of April, it is only half an inch *per* day at a medium. Theſe proportions muſt be underſtood to relate to ſuch parts of the river as are removed from the influence of the tides; of which more will be ſaid preſently. The decreaſe of the inundation does not always keep pace with that of the river, by reaſon of the height of the banks; but after the beginning of October, when the rain has nearly ceaſed, the remainder of the inundation goes off quickly by evaporation, leaving the lands highly manured, and in a ſtate fit to receive the ſeed, after the ſimple operation of plowing.

There is a circumſtance attending the increaſe of the Ganges, and which, I believe, is little known or attended to; becauſe few people have made experiments on the heights to which the periodical flood riſes in different places. The circumſtance I allude to, is, the difference of the quantity of the increaſe (as expreſſed in the foregoing table) in places more or leſs remote from the ſea. It is a fact, confirmed by repeated experiments, that from about the place where the tide commences, to the ſea, the height of the periodical increaſe diminiſhes gradually, until it totally diſappears at the point of confluence. Indeed, this is perfectly conformable to the known laws of fluids; the Ocean preſerves the ſame level at all ſeaſons (under ſimilar circumſtances of tide) and neceſſarily influences the level of all the waters that communicate with it, unleſs precipitated in the form of a cataract. Could we ſuppoſe, for a moment, that the increaſed column of water, of 31 feet perpendicular, was continued all the way to the ſea, by ſome preternatural agency: whenever that agency was removed, the head of the column would diffuſe itſelf over the Ocean, and the remaining parts would follow, from as far back as the influence of the Ocean extended; forming a ſlope, whoſe perpendicular height would be 31 feet. This is the preciſe ſtate in which we find it. At the point of junction with the ſea,

ſea, the height is the ſame in both ſeaſons at equal times of the tide. At Luckipour there is a difference of about ſix feet between the heights in the different ſeaſons; at Dacca, and places adjacent, 14; and near Cuſtee, 31 feet. Here then is a regular ſlope; for the diſtances between the places bear a proportion to the reſpective heights. This ſlope muſt add to the rapidity of the ſtream; for, ſuppoſing the deſcent to have been originally four inches *per* mile, this will increaſe it to about five and an half. Cuſtee is about 240 miles from the ſea, by the courſe of the river; and the ſurface of the river there, during the dry ſeaſon, is about 80 feet above the level of the ſea at high water *. Thus far does the Ocean manifeſt its dominion in both ſeaſons: in the one by the ebbing and flowing of its tides; and in the other by depreſſing the periodical flood, till the ſurface of it coincides as nearly with its own, as the deſcent of the channel of the river will admit †.

Similar circumſtances take place in the Jellinghy, Hoogly, and Burrampooter Rivers; and, I ſuppoſe, in all others that are ſubject either to periodical or occaſional ſwellings.

Not only does the flood diminiſh near the ſea, but the river banks diminiſh in the ſame proportion; ſo that in the dry ſeaſon the height of the periodical flood may be known by that of the bank.

* The tides in the River Amazons are perceptible at 600 miles above its mouth; but at an elevation of only 90 feet, according to M. De Condamine. It remains to be told what the ſtate of the river was at the time of making the experiment; becauſe the land-floods have the effect of ſhortening the limits of the tide's way.

† The Count De Buffon has ſlightly mentioned this circumſtance attending the ſwelling of rivers; but imputes it to the increaſed velocity of the current, as the river approaches the ſea: which, ſays he, carries off the inundation ſo quick, as to abate its height. Now (with the utmoſt deference to ſo great an authority) I could never perceive, that the current, either in the Ganges, or any other river, was ſtronger near the ſea than at a diſtance from it. Even if we admit an acceleration of the current during the ebb-tide, the flux retards it in ſo conſiderable a degree, as at leaſt to counter-balance the effects produced by the temporary increaſe of velocity.

I am

I am aware of an objection that may be made to the above ſolution; which is, that the lowneſs of the banks in places near the ſea, is the true reaſon why the floods do not attain ſo conſiderable a height, as in places farther removed from it, and where the banks are high; for that the river, wanting a bank to confine it, diffuſes itſelf over the ſurface of the country. In anſwer to this, I ſhall obſerve, that it is proved by experiment, that at any given time, the quantity of the increaſe in different places, bears a juſt proportion to the ſum total of the increaſe in each place reſpectively: or, in other words, that when the river has riſen three feet at Dacca, where the whole riſing is about 14 feet; it will have roſe upwards of ſix feet and a half at Cuſtee, where it riſes 31 feet in all.

The quantity of water diſcharged by the Ganges, in one ſecond of time, during the dry ſeaſon, is 80,000 cubic feet; but the river, when full, having thrice the volume of water in it that it had at the time when the experiment was made; and its motion being alſo accelerated in the proportion of 5 to 3; the quantity diſcharged in a ſecond at that ſeaſon is 405,000 cubic feet. If we take the medium the whole year through, it will be nearly 180,000 cubic feet in a ſecond.

THE BURRAMPOOTER, which has its ſource from the oppoſite ſide of the ſame mountains that give riſe to the Ganges, firſt takes its courſe eaſtward (or directly oppoſite to that of the Ganges) through the country of Thibet, where it is named *Sanpoo* or *Zanciu*, which bears the ſame interpretation as the Gonga of Hindooſtan: namely, THE RIVER. The courſe of it through Thibet, as given by Father DU HALDE, and formed into a map by Mr. D'ANVILLE, though ſufficiently exact for the purpoſes of general geography, is not particular enough to aſcertain the preciſe length of its courſe.

After

After winding with a rapid current through Thibet, it waſhes the border of the territory of Laſſa (in which is the reſidence of the grand Lama) and then deviating from an eaſt to a ſouth-eaſt courſe, it approaches within 220 miles of Yunan, the weſternmoſt province of China. Here it appears, as if undetermined whether to attempt a paſſage to the ſea by the Gulf of Siam, or by that of Bengal; but ſeemingly determining on the latter, it turns ſuddenly to the weſt through Aſſam, and enters Bengal on the north-eaſt. I have not been able to learn the exact place where it changes its name; but as the people of Aſſam call it Burrampoot, it would appear, that it takes this name on its entering Aſſam. After its entry into Bengal, it makes a circuit round the weſtern point of the Garrow Mountains; and then, altering its courſe to ſouth, it meets the Ganges about 40 miles from the ſea.

Father Du Halde expreſſes his doubts concerning the courſe that the Sanpoo takes after leaving Thibet, and only ſuppoſes generally that it falls into the gulf of Bengal. M. D'Anville, his geographer, not without reaſon ſuppoſed the Sanpoo and Ava River to be the ſame; being juſtified by the information which his materials afforded him: for the Burrampooter was repreſented to him, as one of the inferior ſtreams that contributed its waters to the Ganges, and not as its equal or ſuperior; and this was ſufficient to direct his reſearches, after the mouth of the Sanpoo River, to ſome other quarter. The Ava River, as well from its bulk, as the bent of its courſe for ſome hundred miles above its mouth, appeared to him to be a continuation of the river in queſtion: and it was accordingly deſcribed as ſuch in his maps, the authority of which was juſtly eſteemed as deciſive; and, till the year 1765, the Burrampooter, as a capital river, was unknown in Europe.

On tracing this river in 1765, I was no leſs ſurprized, at finding it rather larger than the Ganges, than at its courſe previous to its entering Bengal. This I found to be from the eaſt; although all the

the former accounts repreſented it as from the north: and this unexpected diſcovery ſoon led to enquiries, which furniſhed me with an account of its general courſe to within 100 miles of the place where DU HALDE left the Sanpoo. I could no longer doubt, that the Burrampooter and Sanpoo were one and the ſame river: and to this was added the poſitive aſſurances of the Aſſamers, "That *their* "river came from the north-weſt, through the Bootan mountains." And to place it beyond a doubt, that the Sanpoo River is not the ſame with the river of Ava, but that this laſt is the great *Nou Kian* of Yunan; I have in my poſſeſſion a manuſcript draught of the Ava River, to within 150 miles of the place where DU HALDE leaves the Nou Kian, in its courſe towards Ava; together with very authentic information that this river (named *Irabattey* by the people of Ava) is navigable from the city of Ava into the province of Yunan in China *.

The Burrampooter, during a courſe of 400 miles through Bengal, bears ſo intimate a reſemblance to the Ganges, except in one particular, that one deſcription may ſerve for both. The exception I mean is, that, during the laſt 60 miles before its junction with the Ganges, it forms a ſtream which is regularly from four to five miles wide, and but for its freſhneſs might paſs for an arm of the ſea. Common deſcription fails in an attempt to convey an adequate idea of the grandeur of this magnificent object; for,

——— Scarce the muſe
Dares ſtretch her wing o'er this enormous maſs
Of ruſhing water; to whoſe dread expanſe,
Continuous depth, and wond'rous length of courſe,
Our floods are rills ———

* My information comes from a perſon who had reſided at Ava. See alſo the Modern Univerſal Hiſtory, vol. 6, page 204. The courſes of the Burrampooter and Ganges, as well as that of the Ava River from Yunan to the ſea, are deſcribed in the Map of HINDOOSTAN, lately publiſhed.

Thus

Thus pouring on, it proudly ſeeks the deep,
Whoſe vanquiſh'd tide, recoiling from the ſhock,
Yields to this liquid weight ——— ———

THOMSON's Seaſons.

I have already endeavoured to account for the ſingular breadth of the Megna, by ſuppoſing that the Ganges once joined it where the Iſſamutty now does; and that their joint waters ſcooped out its preſent bed. The preſent junction of theſe two mighty rivers below Luckipour, produces a body of running freſh water, hardly to be equalled in the old hemiſphere; and, perhaps, not exceeded in the new. It now forms a gulf interſperſed with iſlands, ſome of which rival, in ſize and fertility, our iſle of Wight. The water at ordinary times is hardly brackiſh at the extremities of theſe iſlands; and, in the rainy ſeaſon, the ſea (or at leaſt the ſurface of it) is perfectly freſh to the diſtance of many leagues out.

The *Bore* (which is known to be a ſudden and abrupt influx of the tide into a river or narrow ſtrait) prevails in the principal branches of the Ganges, and in the Megna; but the Hoogly River, and the paſſages between the iſlands and ſands ſituated in the gulf, formed by the confluence of the Ganges and Megna, are more ſubject to it than the other rivers. This may be owing partly, to their having greater *embouchures* in proportion to their channels, than the others have, by which means a larger proportion of tide is forced through a paſſage comparatively ſmaller; and partly, to there being no capital openings near them, to draw off any conſiderable portion of the accumulating tide. In the Hoogly or Calcutta River, the *Bore* commences at Hoogly Point (the place where the river firſt contracts itſelf) and is perceptible above Hoogly Town; and ſo quick is its motion, that it hardly employs four hours in travelling from one to the other, although the diſtance is near 70 miles. At Calcutta, it ſometimes occaſions an inſtantaneous riſe of five feet:

and

and both here, and in every other part of its track, the boats, on its approach, immediately quit the ſhore, and make for ſafety to the middle of the river.

In the channels, between the iſlands in the mouth of the Megna, &c. the height of the *Bore* is ſaid to exceed twelve feet; and is ſo terrific in its appearance, and dangerous in its conſequences, that no boat will venture to paſs at ſpring tide. After the tide is fairly paſt the iſlands, no veſtige of a *Bore* is ſeen, which may be owing to the great width of the Megna, in compariſon with the paſſages between the iſlands; but the effects of it are viſible enough, by the ſudden riſing of the tides.

THE Rivers are in a tranquil ſtate, from the time of the change of the Monſoon in October, to the middle of March; when the *Northweſters* begin in the eaſtern parts of BENGAL (though later as we advance weſtwards) and may be expected once in three or four days until the commencement of the rainy ſeaſon. Theſe *Northweſters*, which have their denomination from the quarter they uſually originate in, are the moſt formidable enemies that are met with in this inland navigation; they being ſudden and violent ſqualls of wind and rain; and though of no long duration, are often attended with fatal effects, if not carefully guarded againſt: whole fleets of trading-boats having been ſunk by them, almoſt inſtantaneouſly. They are more frequent in the eaſtern, than in the weſtern part of BENGAL; and happen oftner towards the cloſe of the day, than at any other time. As they are indicated ſome hours before they arrive, by the riſing and very ſingular appearance of the clouds, the traveller has commonly time enough to ſeek a place of ſhelter. It is in the great rivers alone, that they are ſo truely formidable: and

that about the latter end of May, and beginning of June, when the rivers are much increaſed in width.

After the commencement of the rainy ſeaſon (which period varies in different parts, from the middle, to the end of June) tempeſtuous weather muſt be occaſionally expected. Places of ſhelter are more common at this ſeaſon, than at any other, by the filling of the creeks and inlets, as the river increaſes: and, on the other hand, the bad weather, when it happens, is of longer continuance than during the ſeaſon of the Northweſters. The rivers being now ſpread to the breadth of ſeveral miles, a ſtrong wind has the power of raiſing large waves on them, and particularly when blowing in a contrary direction to the rapid parts of the ſtream; which at ſuch times ſhould be avoided, as much from motives of conveniency as of ſafety.

During the long interval between the end of the rainy ſeaſon, and the beginning of the Northweſters, one proceeds in ſecurity with reſpect to weather, and has only to obſerve a common degree of attention to the piloting the boat clear of ſhallows, and ſtumps of trees. Theſe will generally be avoided by keeping neareſt to the ſide that has the ſteep bank; but not ſo near, as to be within the verge of its inferior ſlope. This ſteep bank (See page 111) has the deepeſt water, and the ſtrongeſt current near it; and is therefore, on both accounts, the proper ſide to keep on, when going down with the ſtream; as its rate of motion muſt principally determine that of the boat; for the motion acquired by the oars of a large *Budgerow* * hardly exceeds 8 miles a day, at ordinary times.

From the beginning of November to the middle or latter end of May, the uſual rate of going *with* the ſtream, is forty miles in a day of 12 hours; and during the reſt of the year, from 50 to 70 miles.

* A travelling boat, conſtructed ſomewhat like a Pleaſure-barge. Some have cabins 14 feet wide, and proportionably long; and draw from $2\frac{1}{2}$ to 3 feet water.

The current is ſtrongeſt whilſt the waters of the inundation are draining off; which happens in part of Auguſt, and September.

In many of the ſhallow rivers, the current is exceedingly ſlow during the dry months; inſomuch, that the track-rope is frequently uſed in going downwards.

In towing *againſt* the ſtream, the ſteep ſide is alſo generally preferred, on account of the depth of water; although the current runs ſo much ſtronger there, than on the oppoſite ſide. On theſe occaſions, one ought to be provided with a very long track-rope, as well to avoid the falling pieces of the ſteep bank on the one ſide, as the ſhallow water on the other, when it becomes neceſſary to change ſides, through the badneſs of the tracking ground. The anchor ſhould always be kept ready for dropping, in caſe the track-rope breaks.

Seventeen, to twenty miles a day, according to the ground, and the number of impediments, is the greateſt diſtance that a large Budgerow can be towed againſt the ſtream, during the fair ſeaſon: and to accompliſh this, the boat muſt be drawn at the rate of four miles and a half *per* hour, through the water, for 12 hours. When the waters are high, a greater progreſs will be made, notwithſtanding the increaſed velocity of the current; becauſe the filling of the river-bed gives many opportunities of cutting off angles and turnings; and ſometimes even large windings, by going through creeks. And as the wind at this ſeaſon, blows upwards in moſt of the rivers, opportunities of uſing the ſail frequently occur.

In the very ſingular navigation a-croſs the *Jeels*, or inundation, between Dacca and Nattore, &c. in which 100 miles or more, are ſailed on nearly a ſtraight courſe, leaving the villages and groves to the right and left; little difficulty occurs, unleſs the wind ſhould fail: for whilſt it continues to blow, it is always fair, during the ſeaſon of the inundation. The current preſents only a trifling obſtacle;

ſtacle; ſince its motion (which is nearly parallel to the courſe of the Ganges) is ſeldom half a mile per hour.

The ſeaſon of the *Northweſters*, is, above all others, that which requires the moſt attention and care. Should one of thoſe ſqualls approach, and no creek or inlet offer for ſhelter, when in the wide rivers; the ſteep bank, if not in a *crumbling* ſtate, ſhould always be preferred to the flat one, whether it lie to windward or leeward. If the bank be in a crumbling ſtate, a retreat to a firm part of it, (which is moſt likely to be found in the ſtraighteſt parts of the river,) ſhould be attempted. But if this cannot be done, the flat ſide muſt be taken up with; and if it be a *lee-ſhore*, the anchor ſhould be thrown out to prevent driving on it. In theſe caſes the maſt is always ſuppoſed to be ſtruck: and provided this be done, and the cargo judiciouſly diſpoſed, it is probable that a well-conſtructed Budgerow will be in no danger of overſetting by the mere force of the wind alone: although by an unfortunate, or an ill-choſen ſituation, it may be ſo much expoſed to the waves, as to be filled and ſunk by them. At this ſeaſon, every traveller ſhould be particularly attentive to the nature of the River-bank, as well as to the appearance of the horizon, during the laſt hours of the afternoon; and if he finds a place of ſhelter, he ſhould ſtop for the night: and not heſitate about loſing time, which may be retrieved the next morning, by ſetting out ſo much earlier. The boatmen work with much more alacrity on this plan; becauſe they have day-light before them to ſecure their boat, provide fewel, and dreſs and eat their proviſions.

As the water is always either riſing or falling within the beds of the rivers, it is impoſſible for a Map to aſſign preciſely where a place of ſhelter ſhall be found, at any given time. Thus much, however, may be concluded, that in a place where the junction of two conſiderable channels is effected when the rivers are up, there will be an inlet, or deep bay, throughout the dry ſeaſon, although one of the channels ſhould be dried up. The waters (as we have

ſaid

ſaid before) are riſing from the latter end of April, to the middle of Auguſt; and falling during the reſt of the year.

The navigation through THE WOODS, or SUNDERBUNDS, is effected chiefly by means of the tide. In the large rivers, or thoſe that communicate immediately with the ſea, the circumſtances of the tide are more analagous to the ordinary courſe of it, than in the ſmall lateral channels which ſerve to connect the great rivers together; the motion of the tide in thoſe ſmall channels, being regulated by the poſitions of their openings into the rivers. For if two rivers of equal bed and parallel courſe, are united by a lateral or croſs canal, the flood tide will enter that opening of the canal which lies neareſt to the ſea, and run through it into the other river; and the ebb tide *vice verſa*. But as the arrival of the tide depends on the capacity and formation of the rivers, as well as on the abſolute diſtance it has to run, it will not be an eaſy matter to determine its direction at any given time, even with the help of a Map.

There are two diſtinct paſſages through the Sunderbunds, the one named the ſouthern or SUNDERBUND PASSAGE, the other the BALIAGOT PASSAGE. The firſt is the fartheſt about, and leads through the deepeſt and wideſt rivers; and is of courſe, the moſt expoſed during tempeſtuous weather. It opens into the Calcutta River, thro' Channel-creek *, about 65 miles below the town. The Baliagot Paſſage opens into a Lake on the eaſt ſide of Calcutta; from whence, within a very few years, a ſmall canal has been cut to join the lake with the river.

Theſe paſſages preſent to the imagination both a grand and a curious ſpectacle: a navigation of more than 200 miles through a foreſt, divided into numberleſs iſlands by a continued labyrinth of Channels, ſo various in point of width that a veſſel has at one time her maſts almoſt entangled in the trees; and at another, ſails uninter-

* A part of this Creek forms the place known of late by the name of NEW-HARBOUR.

ruptedly

ruptedly on a capacious river, beautifully ſkirted with woods, and affording a viſta of many miles each way. The water is every where ſalt; and the whole extent of the foreſt abandoned to wild beaſts: ſo that the ſhore is ſeldom viſited but in caſes of neceſſity; except by the wood-cutters and ſalt-makers, whoſe "dreadful trade" is exerciſed at the conſtant peril of their lives: for the Tygers not only appear on the margin in queſt of prey, but often, in the night time, ſwim to the boats that lie at anchor in the middle of the river.

Theſe paſſages are uſed during the whole year, by thoſe who go to and from the lower parts of the Ganges and Calcutta, &c: and during the ſeaſon when the weſtern branch of the Ganges is almoſt dried up, the whole trade of Bengal (the weſtern Provinces excepted) paſſes either by Channel-creek, or Baliagot, but chiefly by the former; ſome articles of the Company's cargoes being brought more than 900 miles by water, at this ſeaſon.

EXPLANATION of PLATE, Nº. I.

A. A. A. Steep Banks, corroded by the current; the fragments of which are depoſited, and form the Banks B, B, B.

C. A ſand Bank, accumulating to an Iſland. This once joined to D; till inſulated by a breach of the river.

E. An Iſland, formed and inhabited. This alſo was a ſand-bank, thrown up round the point F.

G. An Iſland accumulating in the midſt of the Channel.

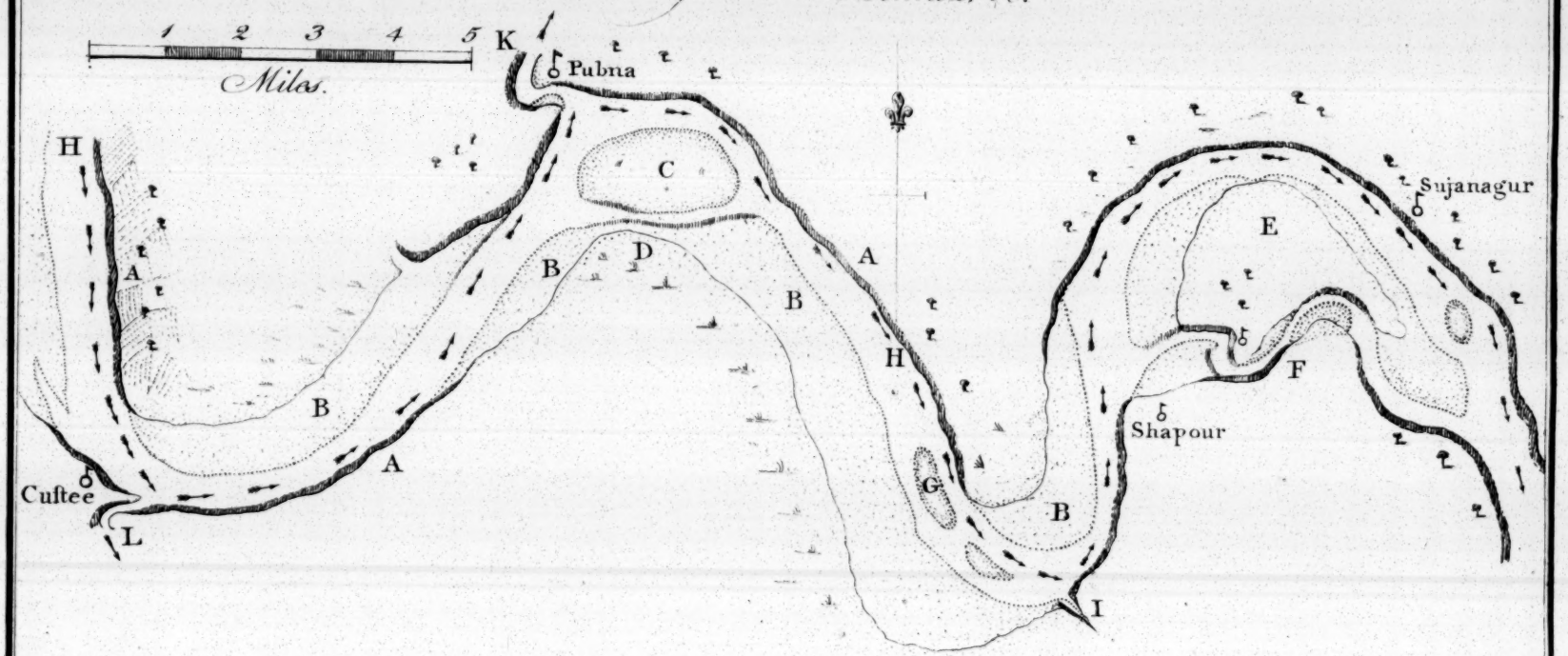
H. The line of the ſtrongeſt current.

I. A Gulf occaſioned by the force of the current, from the oppoſite ſide, ſtriking againſt the Bank: the origin of a future branch iſſuing from the great river. In a courſe of time, the firſt reach of it becomes retrogade to the courſe of the river (See note, page 114) as at K and L.

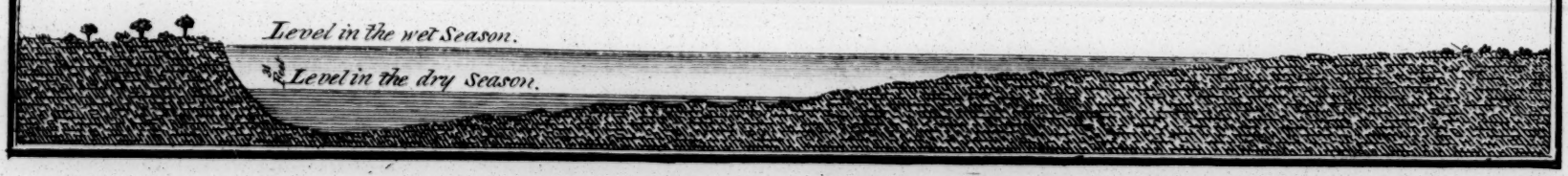
N. B. The ſection of the Branch of the Ganges is exactly ſimilar to that of the Ganges itſelf, except in the article of width.

ERRATUM, page 121, line 11, read *amounts*.

PLAN of part of the Course of the GANGES, *to explain the nature of the steep and shelving Banks, Islands, &c.*



SECTION of a Branch of the GANGES, *as a further explanation of the steep and shelving Banks.*



Publiſhed accord.g to Act of Parl.t by J.Rennell June 30.th 1783.

MAP *of the* INLAND NAVIGA

FYZABAD
Oude
Taundah
Chowarah
Gogra R.
Sultanpour
Gooracknpour
Doorygaut
Suagra
Secunderpour
Boggah
Bettyah
Burhurvah
Karnowl
Fathypour
Jionpour
Mangy
Singhya
Gazypour
Ganges River
Hajypour
ALLAHABÂD
Dynapour
PATNA
Buxar
Rajowly
Monvah
Bar
Benares
Coramnussa R.
Durbungah
Nagorbussy
Nautpour
Cundwa Gaut
Purnea
Lowcooty
Monghir
Cosa Mouth
Giragola
Mirzapour
Chunargur
Ruynullah
Jangaira
Boghpour
Terriagully
Saferam
Daioudnagar
Gayah
Rotasgur
Darra
Patchwarry
Ramgur
Naranpour
Pachete
Nagore
Soonamooky
Bissunpour
Midnapour

Explanation.

◎ *Cities.* ▫ *Capitals of Provinces.* ○ *Towns & Villages.*

——— *Passages navigable throughout the Year.*

..... *d.o navigable only part of the Year.*

Extent of the annual Inundations.

Published according to Act of Parliament by J. Rennell Jan.y 1.st

GATION.

Sanashgotta
Jelpigory
Saibgunge
Coos Beyhar
Rangamatty
Jughigopa
Goalparah
Mohanada River
Consumah
Coorsah
Curygong
Nabobgunge
Tayepour
Dinagepour
Rungpour
Baggoa
Oliapour
Burrampooter R.
Sumdya
10 20 30 40 50 100
Miles
Chilmary
Maniahry
Bissuntgola
Currydah
Noongola
Currybary
Goragot
Gobingung
Dewangunge
Susung
Laour
Pundua
Gentiah
Hyatpour
Mauldah
Buddaul
Seebgunge
Sheerpour
Solagur
Inchacolus
Silhet
Banga
English Bazar
Ijjoe
Jenni R. Head
Nockeelah
Goglajoor
Nabobgunge
Gour
Purnabahah
Nogong
Bygonbary
Champrapour
Seerpour
Callyajury
Syalmarrah
Panchot
Azmeri
Doolahurry
Tazpour
Jungelbary
Sooty
Nabobgunge
Nulshi
Dugduga
Masseorya
Sujalpour
Hobibgunge
Jungipour
Posotya
Nattore
Sittalya
Hobitnagur
Toke
Torroff
Bajetpour
Bogwan-gola
Bauleah
Chappaliya
Harryal
Belauchy
Cauzmuhry
Delolpour Gaat
MOORSHEDABAD
Surdah
Chatmol
Attya
Tootbaddy
Cossimbuzar
Jellinghi
Narainpour
Shazadpour
Sunderampour
Burhampour
Boolbarya
Baerah
Edalia
Horrisongkor
Pubna
Balsuree
Jummuandy
Rattungunge
Gowalpara
Dumroy
Corallya
Custee
Soory
Comercolly
Jaffiergunge
Dacca
Noornagur
Ballatunghy
Plassey
Buxipour
Moddapour
Callaiya
Narangunge
Cutwa
Patimahry
Keerdanpour
Hajigunge
Churain
Ahgadeep
Jennidah
Edracpor
Allynia
Mirzapour
Comillah
Nuddeah
Gwahree
Boosnah
Nuldingah
Jaynagur
Calligonga
Buderashon
Chandpour
Naranpour
Sibmbas
Mahmudpour
Hajiygunge
Mirzapour
Kishenagur
Burdwan
Chandnah R.
Hobibgunge
Gubinpour Creek
Monoargunge
Culna
Santipour
Mega
Manickrauge
Moorley
Serampour
Colinda
Selimabad
Chogdah
Ganges R.
Gopalgunge
Garnady
Luckipour
Bansbarya
Boongong
Burdipour
Hoogly
Chinsura
Mirjanagur
Conderopour
Joogdya
Jessore Culna
Burryshol
Chandernagore
Ryna bad
Sutalury
Serampour
Mouth Rynabad R.
Duhya
Decan Shabazpour
Hatiah
Sandeep
Gollaul
CALCUTTA
Barron hutty
Suja gunge
Backergange
Illamabad
Omptah
Baliagot
Charcolly
Budgebudge
Mirzagunge
Doolyapour
Futta
Bamjny
Gongacally
Murjatta
Culpee
Nulluah
Mutwall R.
Hooringotta
Channel Creek
Roymungul
Injellee

1st 1781.

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*** The Names of Countries, or Nations, are in Roman Capitals; and the Names, or Titles of Princes, Rajahs, or Chiefs, in Italic ones. The Titles of Books, and the Names of Authors, as well as of other Perſons whoſe Authorities are quoted, or whoſe Aſſiſtance has been acknowledged in the Courſe of the Work, are in Italics: and the few Names of Places belonging to Ancient Geography, have an * prefixed to them.

†*† Abbreviations. Terrs. (Territories) I. (Iſland) R. (River) Pt. (Point) Mt. or Mts. (Mountain, or Mountains.)

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§†§ The whole Map being divided into Squares, or Spaces, by the Interſections of the parallels of Latitude with the Meridians, each particular Square is pointed out by Letters of Reference alphabetically arranged along the Margins of the Map; the ſide Margins having Capital Letters, and the top and bottom ones, ſmall Letters. For inſtance, the City of DELHI is given in the Index under the Letters H m: and if the eye be guided along horizontally in the Map, from H, until it comes under m, the Square which contains DELHI will be found.

*** The Names of Countries, or Nations, are in Roman Capitals; and thoſe of Princes, Rajahs, or Chiefs, in Italic Capitals: and ſuch Places as have their Situations deſcribed in the Index only, and not in the Map (owing to want of room) are in Italics.

†*† Abbreviations. Terrs. (Territories) I. (Iſland) R. (River) Pt. (Point) Mt. or Mts. (Mountain, or Mountains) F. (Fort.)

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E R R A T A.

Page 4, Line 7—read *Tellingana*.
7, line the laſt—read 1780.
8, Note, line 2—for 350, read 250.
, ——, line 3—for *St. Croix*, read *de la Croix*.
9, ——, line 8, and throughout the Book, for *Dowe*, read *Dow*.
10, line 8—dele *of*.
18, line 24—read *Burhanpour*.
20, Notes, line 5—read *which* place *is* 1′ *eaſt from Calcutta*.
31, line 21—for 41, read 42.
36, line 13—after Hindooſtan, add, *and on the north, by the firſt ridge of mountains towards Bootan*.
41, laſt line—read *round*.
54, line 6—read *Toulonba*.
55, Notes, line 6—read *Toulonba*.
65, line 9—for *Amedabad*, read *Amednagur*.
—, Notes, line 7—for *Mr. Smith's obſervations*, read *Mr. Smith's map*.
91, line 14—read *ſources*.

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